System Release 7.14

ASTRO® 25 INTEGRATED VOICE AND DATA

MCC 7100 IP DISPATCH CONSOLE SETUP AND USER GUIDE

November 2013

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About MCC 7100 IP Dispatch Console Setup and User Guide

This manual provides setup and user guide descriptions for the MCC 7100 IP Dispatch Console (software only) feature. It also describes the requirements and considerations necessary for implementing this feature in an ASTRO® 25 system.

What is Covered In This Manual?

This manual contains the following chapters:

- *MCC 7100 IP Dispatch Console – Overview on page 27*, describes the MCC 7100 IP Dispatch Console, its components and operational features.
- *MCC 7100 IP Dispatch Console – Setup and Installation on page 37*, provides setup and installation procedures for all components related to the MCC 7100 IP Dispatch Console.
- *PRX 7000 Console Proxy – Setup and Installation on page 81*, provides information and activities associated with the setup and installation of the PRX 7000 Console Proxy.
- *USB Audio Interface Module on page 93*, provides information and activities associated with the setup and installation of the USB Audio Interface Module.
- *Console Dispatch Status and Peripheral Configuration Tool on page 109*, provides descriptions and procedures for using the Peripheral Configuration Tool and Console Dispatch Status that are installed as part of the MCC 7100 IP Dispatch Console and PRX 7000 Console Proxy installations.
- *Instant Recall Recorder on page 127* provides descriptions and procedures for using the Instant Recall Recorder that is installed as part of the MCC 7100 IP Dispatch Console.
- *MCC 7100 IP Dispatch Console - Additional Procedures and Information on page 135*, provides additional helpful procedures and information that are not part of the typical MCC 7100 IP Dispatch Console installation.
- *Enhanced Alert Tones on page 141*, provides information about creating customized alert tones and using them on the MCC 7100 IP Dispatch Console.
- *MCC 7100 IP Dispatch Console – System Release Compatibility on page 147*, provides support for using the MCC 7100 IP Dispatch Console in ASTRO 7.11 and ASTRO 7.13 systems.

Helpful Background Information

Motorola offers various courses designed to assist in learning about the system. For information, go to *http://www.motorolasolutions.com/training* to view the current course offerings and technology paths.

Related Information

For associated information about the radio system, see the following documents.

Related Information	Purpose
Standards and Guidelines for Communication Sites	Provides standards and guidelines that should be followed when setting up a Motorola communications site.

Table continued…

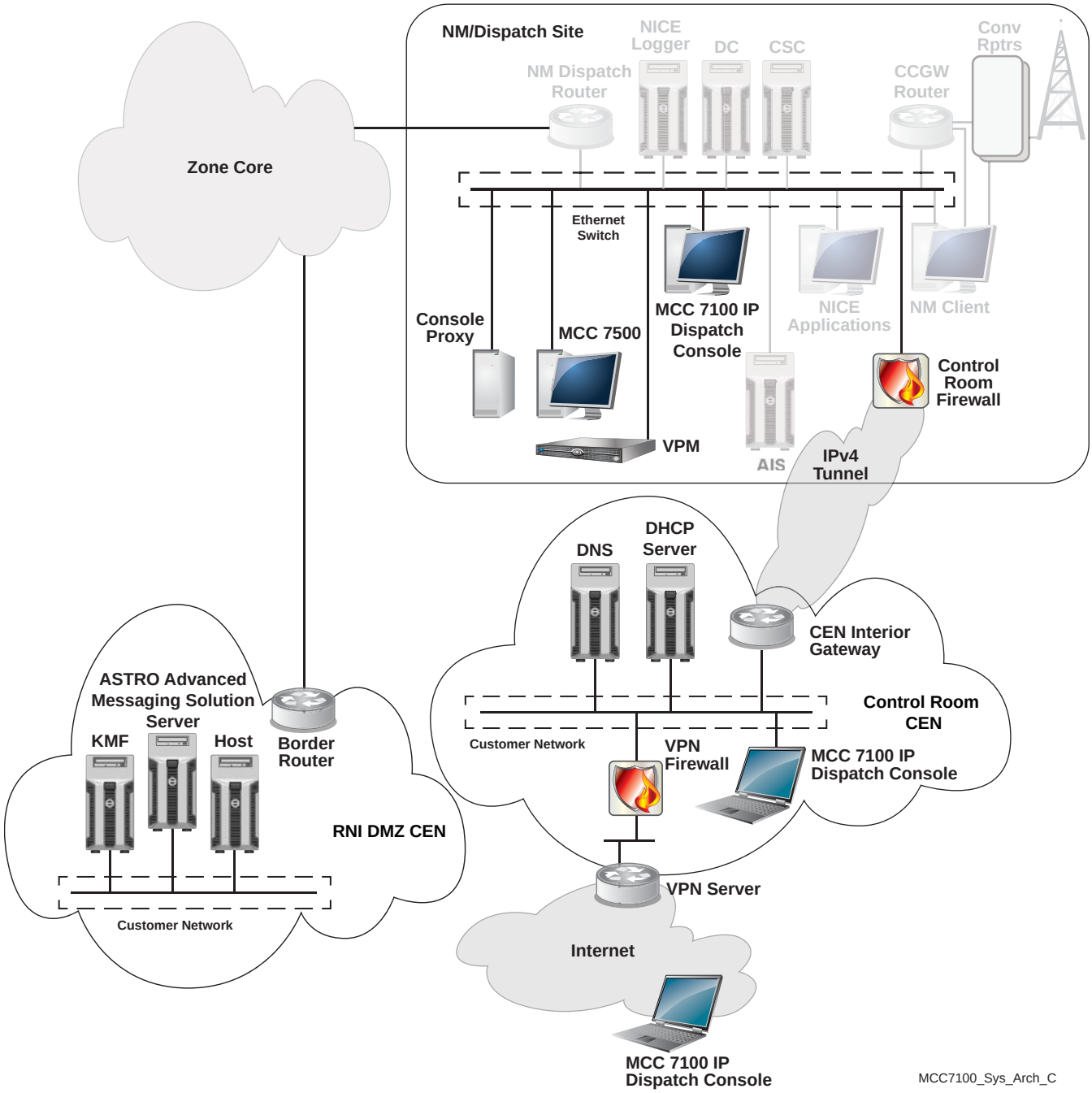
Related Information	Purpose
	Also known as R56 manual. This manual may be purchased on CD 9880384V83, by calling the North America Parts Organization at 800-422-4210 (or the international number: 302-444-9842).
System Documentation Overview	For an overview of the ASTRO® 25 system documentation, open the graphical user interface for the ASTRO® 25 system documentation set and select the **System Documentation Overview** link. This opens a file that includes: • ASTRO® 25 system release documentation descriptions • ASTRO® 25 system diagrams • ASTRO® 25 system glossary For an additional overview of the system, review the architecture and descriptive information in the manuals that apply to your system configuration.
Dynamic System Resilience	Provides information necessary to understand, operate, maintain, and troubleshoot the Dynamic System Resilience (DSR) feature which may be implemented on your ASTRO® 25 system. This feature adds a geographically separate backup zone core to an existing zone core to protect against catastrophic zone core failures.
Conventional Operations	Provides information regarding conventional channel resource operating characteristics in standalone systems or ASTRO® 25 radio communication systems with K Series, L Series or M Series.
MCC 7500 Dispatch Console with Voice Processor Module	Describes site-level characteristics of VPM-based Console Dispatch sites including theory of operation, installation and configuration for hardware and software, operation, maintenance, and troubleshooting information.
MCC 7500/7100 Elite Admin User's Guide	Provides administrators with information required to configure and administer the Elite Dispatch software application to enable communication paths between dispatch console operators and radio system resources for the MCC 7500 and MCC 7100 dispatch consoles.
MCC 7500/7100 Elite Dispatch User's Guide	Provides user guide information intended for dispatch console operators. This manual describes how to use the Elite Dispatch software application supporting the MCC 7500 and MCC 7100 dispatch consoles.
Dispatch Console Backward Compatibility Guide	The Dispatch Console Backward Compatibility Guide is a reference guide that provides a list of console features supported by various ASTRO® 25 system releases. While the backward compatibility feature makes it possible to use an MCC 7500 Dispatch Console or MCC 7100 IP Dispatch Console in a system release previous to the system release in which the console was introduced, the features available for a backward compatible console can be limited to those identified in this manual.

Chapter 1

MCC 7100 IP Dispatch Console – Overview

The MCC 7100 IP Dispatch Console is a software-based dispatch console that requires no external hardware connections to perform dispatch operations. The MCC 7100 IP Dispatch Console can be located inside the ASTRO RNI at a console site or conventional subsystem. It can also be deployed outside the ASTRO RNI and connected over the Internet through a firewall to a console proxy located inside the ASTRO RNI.

Figure 1: MCC 7100 IP Dispatch Console System Diagram



The following are the system components for the MCC 7100 IP Dispatch Console:

- MCC 7100 IP Dispatch Console Software
- PRX 7000 Console Proxy
- Console Site Control Room Firewall
- Customer Supported Components:
  - DNS Server
  - DHCP Server
  - Customer Enterprise Network (CEN) Firewall
  - Virtual Private Network (VPN)

MCC 7100 IP Dispatch Console in Console Site Architectures

Dispatch console sites can have one or more console operator positions. The location of the dispatch console, the system architectures it supports, and your organizational requirements determine the equipment required at a console site.

An MCC 7100 IP Dispatch Console is supported in K, L, and M core system architectures. An MCC 7100 IP Dispatch Console is not supported in ASTRO Express systems.

The MCC 7100 IP Dispatch Console can be located in the following console sites:

- Console Site - inside the ASTRO Radio Network Infrastructure (RNI)
- Remote Console Site - outside the ASTRO RNI
- Remote Console Site at a Distributed Conventional Hub Site in a Conventional Subsystem

MCC 7100 IP Dispatch Console Features

This section provides a list of features supported by the MCC 7100 IP Dispatch Console as compared to the MCC 7500 Dispatch Console:

The section lists the features that are supported with the MCC 7100 IP Dispatch Console within the following areas:

- System Level
- ASTRO® 25 Trunking
- ASTRO® 25 Conventional
- MDC 1200 Conventional
- Analog Conventional
- General Security
- Integrated Tone Paging Encoder
- Peripheral Configuration Tool
- Console Dispatch Status
- Integrated Instant Recall Recorder

Related Links

MCC 7100 Peripheral Configuration Tool on page 116
Console Dispatch Status (MCC 7100 IP Dispatch Console) on page 109
Instant Recall Recorder on page 127

System Level Features

The system level features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 1: System Level Feature for the MCC 7100 IP Dispatch Console

System Level Feature	
Co-hab with ASTRO Advanced Messaging Solution Smart Client	Full Participation in Radio System Agency Partitioning
Configured via Radio System Configuration Manager	Participation in Radio System Fault Management when in ASTRO RNI
Deployment inside or outside the ASTRO RNI	Supports Enhanced Local Alias Management (ELAM)

ASTRO 25 Trunking Features

The ASTRO® 25 trunking features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 2: ASTRO 25 Trunking Feature for the MCC 7100 IP Dispatch Console

ASTRO 25 Trunking Feature	
AMBE Half Rate Vocoder for Phase II TDMA Resources	Trunked Private Calls
IMBE/AMBE Vocoder for ASTRO 25 Resources	Trunked PTT ID and Alias
Trunked Announcement Group Calls	Trunked Tactical/Normal
Trunked Call Alerts	Trunked Talk Group Calls
Trunked Emergency Alarms	Trunked Remote Monitor
Trunked Emergency Calls	Trunked Repeater On/Off

ASTRO 25 Conventional Features

The ASTRO® 25 conventional features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 3: ASTRO 25 Conventional Feature for the MCC 7100 IP Dispatch Console

ASTRO 25 Conventional Feature	
Autokey Key Display	Secure Keyset Select
Call Alert	Radio Check
Emergency Alarm and Call	Radio Enable/Disable
Ignore Mobile to Mobile Calls	Radio Message Display
Mixed Mode (Analog/Digital) Operation	Radio Status Display
Momentary Key Override	Radio Status Request
PTT ID and Alias	Received Key Display
Secure Call	Remote Monitor
Secure Key Select	Voice Selective Call

MDC 1200 Analog Conventional Features

The MDC 1200 analog conventional features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 4: MDC 1200 Analog Conventional Feature for the MCC 7100 IP Dispatch Console

MDC 1200 Conventional Feature	
Call Alert	Radio Check
Emergency Alarm	Radio Message Display
Emergency Call	Radio Status Display
Ignore Mobile to Mobile Calls	Radio Status Request

Table continued…

MDC 1200 Conventional Feature	
PTT ID and Alias	Remote Monitor
Radio Enable/Disable	Voice Selective Call

Analog Conventional Features

The analog conventional features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 5: Analog Conventional Feature for the MCC 7100 IP Dispatch Console

Analog Conventional Feature	
Analog Talk & Listen	Private Line (PL) Selection
E & M Control	Repeater On/Off
Frequency Selection	RF Cross Busy
Line Operated Busy Light (LOBL)	RF Cross Mute
Main/Alternate Conventional Interfaces	Tone Remote Control
Monitor	Supervisor Takeover (via Relay)
Mute Second Receiver	WildCard I & II

Encryption Features

The encryption features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 6: Encryption Feature for the MCC 7100 IP Dispatch Console

Encryption Feature	
AES Algorithm	Multi-Select Cross-Mode Alert
ADP Algorithm	Patch Cross-Mode Alert
Clear Audio Alert	Receive Cross-Mode Indication
DES-OFB Algorithm	Software or Hardware based encryption
Key Management via KVL for Micro SD card only	Supports Multiple Algorithms Simultaneously
Key Management via OTEK (Over The Ethernet Keying)	Supports up to 5, 10, 15, 20 Encrypted Calls Simultaneously
Key Management via Store and Forward for Micro SD card only	

Integrated Tone Paging Encoder Features

The integrated tone paging encoder features supported by the MCC 7100 IP Dispatch Console are listed in this section.

Table 7: Integrated Tone Paging Encoder Feature for the MCC 7100 IP Dispatch Console

Integrated Tone Paging Encoder Feature	
ASTRO 25 Conventional Call Alert	Simultaneous Paging Operation

Table continued…

Integrated Tone Paging Encoder Feature	
Digital Dial 1 (1500 Hz)	Quick Call I
Digital Dial 2 (2805 Hz)	Quick Call II B - Tone & Voice
Digital Dial 3 (1500/2805)	Quick Call II C - Tone Only
Knox	Quick Call II D - Battery Saver
Manual Group Pages	Quick Call II E - Competitive
Manual Individual Pages	Quick Page Buttons
MDC 1200 Call Alert	Selected Channel" Paging
Motorola 5/6 Tone	Single Tone 0.5
Pre-Defined Group Pages	Single Tone 1.5
Pre-Defined Individual Pages	Talk Extend
Private Line Stripping	Touch Code
Sequential Paging Operation	Trunked Call Alert

MCC 7100 IP Dispatch Console System Components

The main system components that are used with the MCC 7100 IP Dispatch Console are described in this section.

MCC 7100 IP Dispatch Console

The MCC 7100 IP Dispatch Console is a software-based dispatch console that requires no external hardware connections to perform dispatch operations. Audio Vocoding is performed within the Windows 7 operating system. The MCC 7100 IP Dispatch Console can work with the computer's built-in speakers and microphone, if equipped.

External peripherals such as a microphone, headset and footswitch are also supported. A minimum audio quality of DAQ 3.4 is highly recommended when using certified commercially available peripherals. The MCC 7100 IP Dispatch Console can be configured to dispatch trunking and/or conventional resources. The MCC 7100 IP Dispatch Console supports secure (AES, ADP, and DES-OFB) end-to-end audio encryption. Key storage can be performed through hardware CRYPTR micro or software. See *Load Secure Keys and Algorithms on page 49* for details.

The MCC 7100 IP Dispatch Console can be located inside the ASTRO RNI at a console site or conventional subsystem. The MCC 7100 IP Dispatch Console can also be deployed outside the ASTRO RNI and connect through a firewall to a PRX 7000 Console Proxy located inside the ASTRO RNI.

PRX 7000 Console Proxy

The PRX 7000 Console Proxy is used when MCC 7100 IP Dispatch Consoles are deployed outside the ASTRO RNI. Due to routing issues, multicast audio packets are unable to be sent outside of the ASTRO RNI into the customers network and ultimately over the Internet. The PRX 7000 Console Proxy is located at a traditional console site or in a conventional subsystem. The PRX 7000 Console Proxy is an application that converts multicast audio packets (delivered inside the ASTRO RNI) to unicast audio packets and sends them outside of the ASTRO RNI to an MCC 7100 IP Dispatch Console. The PRX 7000 Console Proxy is also used to perform link maintenance inside the ASTRO RNI on behalf of the MCC 7100 IP Dispatch Consoles when deployed outside of the ASTRO RNI.

Console Site Control Room Firewall

The SSG 140 control room firewall is used at a console site to allow secured communications with outside networks. It is configured for Network Address Translation (NAT) functionality to help eliminate conflicts between an IP address in a Customer Enterprise Network (CEN) and an IP address in the ASTRO RNI. The control room firewall is configured to only allow dispatch console related traffic to and from the CEN. The control room firewall communicates with the CEN interior gateway using Internet Protocol version 4 (IPv4).

The PRX 7000 Console Proxy communicates to the remote MCC 7100 IP Dispatch Console through a firewall. The firewall is located at the console site to allow traffic to/from the PRX 7000 Console Proxy and CEN. Any VPN functionality in the CEN must be provided by the customer.

The interior gateway in the CEN and the console site control room firewall share the link from the console site to the zone core.

A control room firewall can be installed at any console site in the system. There can be multiple control room firewalls in a system; one at each console site. The control room firewall is the demarcation point for the ASTRO network. The networking equipment used to establish a path to a remote MCC 7100 IP Dispatch Console is provided by the customer.

Note: An intrusion detection system (IDS) is not required at each console site, but is an option for security conscious customers.

License Server

The license server is a web server used to generate a license file for activating an MCC 7100 IP Dispatch Console during installation. This file contains the required licensing information as well as the number of connections that the PRX 7000 Console Proxy supports. The license server is not part of the ASTRO RNI or the CEN. It is hosted by Motorola.

Note: The generation of license files is performed by Motorola's Licensing group. Instructions on how to allocate and download license files are provide to the customer.

Key Management Facility for MCC 7100 IP Dispatch Console

The Key Management Facility (KMF) is the centralized key manager in the ASTRO system. The KMF delivers keys securely, using the OTEK feature, to the MCC 7100 IP Dispatch Consoles configured with hardware-based encryption. For MCC 7100 IP Dispatch Consoles configured with software-based encryption, the KMF exports a file that is used to import keys into the console.

Note: The Key Management Facility does not support ADP keys.

Customer Enterprise Network Components

The network components that are provided by the customer are defined in this section. The following components reside within the Customer Enterprise Network (CEN):

- DNS Server
- DHCP Server
- VPN Server

DNS Server

The Domain Name System (DNS) server contains a database of network hostnames and their associated IP addresses for Intranet resources connected to the Intranet. The DNS server contains entries for the ASTRO RNI devices (PRX 7000 Console Proxy, ELAM Server, KMF, etc…).

DHCP Server

The Dynamic Host Configuration Protocol (DHCP) server assigns an IP address to a computer from a defined range of numbers configured for a given network. Each MCC 7100 IP Dispatch Console that is remote from the ASTRO RNI will be assigned a static IP address in the DHCP Server.

VPN Server

The VPN server allows for virtual private network (VPN) connections by an MCC 7100 IP Dispatch Console deployed outside the CEN. The MCC 7100 IP Dispatch Console connects to the CEN over the Internet. This provides individual dispatch operators with secure access to the CEN and ultimately to the ASTRO RNI.

MCC 7100 IP Dispatch Console Theory of Operations

This section describes the functional relationships between components that support the MCC 7100 IP Dispatch Console:

Zone Database Server and LDAP

The MCC 7100 IP Dispatch Console uses Lightweight Directory Access Protocol (LDAP). The Dynamic Host Configuration Protocol (DHCP) server assigns an IP address to a computer from a defined range of IP address numbers configured for a given network. Each MCC 7100 IP Dispatch Console outside the ASTRO RNI is assigned a static address in the DHCP Server.

MCC 7100 IP Dispatch Console – Encryption

The MCC 7100 IP Dispatch Console supports secure encryption. See *Load Secure Keys and Algorithms on page 49* for a complete description on encryption.

MCC 7100 IP Dispatch Console – Link Op

The first dispatch console at a console site that registers with the system and assigns a resource is known as the Link Op. The Link Op refers to the console that is in control of the active link between the site and the zone controller or site controller.

A Link Op is required at a site that contains a PRX 7000 Console Proxy so that an MCC 7100 IP Dispatch Console outside the ASTRO RNI can operate. Every site, including remote console sites, require a Link Op inside the ASTRO RNI in order to operate. An MCC 7100 IP Dispatch Console outside the ASTRO RNI cannot become a Link Op.

Note: For more information, see the “MCC 7500/7100 Dispatch Console - Control Paths and Affiliation” section in the *Conventional Operations* manual.

MCC 7100 IP Dispatch Console and ISSI 8000 / CSSI 8000

The MCC 7100 IP Dispatch Console operator position supports the ISSI 8000 feature. The MCC 7100 IP Dispatch Consoles receive foreign talk group and other foreign system configuration data downloaded from the PRX 7000 Console Proxy (LDAP server). See the *ISSI 8000/CSSI 8000 – InterSystem Gateway* manual for details.

Centralized Event Logging

The MCC 7100 IP Dispatch Console inside the ASTRO RNI sends event logs to the Centralized Event Logging server in the same way as supported by the MCC 7500 Dispatch Console inside the ASTRO RNI, except for

connection information. The MCC 7100 IP Dispatch Console deployed outside the ASTRO RNI does not send event logs to the Centralized Event Logging server. The PRX 7000 Console Proxy logs the following events with Centralized Event Logging server:

- Remote clients connected
- Remote clients disconnected
- Remote clients refused

See the *Centralized Event Logging* manual.

Audio Logging and the MCC 7100 IP Dispatch Console

The AIS / Logger supports the logging of audio from an MCC 7100 IP Dispatch Console (inside and outside the RNI), as follows:

- Recording of console audio by the AIS/ Logging recorder is supported.
- Local (VPM-based) audio logging is not supported.

Note: See the *MCC 7500 Dispatch Console with Voice Processor Module* manual for details.

Aux I/O in the MCC 7100 IP Dispatch Console

The Aux I/O comparator display function in the MCC 7100 IP Dispatch Console uses modified MOSCAD RTUs. The Aux I/O architecture is a client-server model where the MOSCAD RTU and the MCC 7100 IP Dispatch Console provide the server and client functionality, respectively.

The Aux I/O data for the comparator display function, (i.e., comparator controls, report status changes, etc.), between the RTU-server and the MCC 7100 IP Dispatch Console client is communicated through a TCP/IP connection established between the RTU and the MCC 7100 IP Dispatch Console.

The MCC 7100 IP Dispatch Console can connect to one or more RTUs by establishing a TCP/IP connection with each RTU. Similarly, an RTU can support multiple MCC 7100 IP Dispatch Console connections.

If the link between the remote MCC 7100 IP Dispatch Console and the Aux I/O server is lost, the affected MCC 7100 IP Dispatch Consoles will no longer receive any of the comparator display functionality until it reestablishes a connection.

The MCC 7100 IP Dispatch Console supports up to 200 Aux I/Os on the SDM 3000 units (“global” Aux I/O) functionality.

Note: The MCC 7100 IP Dispatch Console supports four local Aux Outputs. They have very specific functions tied to them:

- Indicating Emergency;
- Indicating presence of an inbound call on the currently selected channel
- Indicating a console PTT
- Providing an external output to report activity of one or more general AuxIOs of the console.

If you employ the Aux I/O Server device in a Conventional Subsystem, you must configure it properly to support the Unified Network Configurator (UNC) discovery. You perform the configuration by using the SDM3000 Builder application. If the Aux I/O Server device used in a Conventional Subsystem is not configured properly, UNC discovery lists the device in the UNC Lost and Found folder. If this situation occurs, you must configure the device properly and rediscover it. For detailed information about the SDM3000 Builder, see the *MOSCAD Network Fault Management* manual. After the Aux I/O Server device in a Conventional Subsystem is recognized by UNC, you can use UNC to configure the device. For more information, see the *Unified Network Configurator* manual.

Chapter 2

MCC 7100 IP Dispatch Console – Setup and Installation

This chapter provides setup and installation procedures for all components related to the MCC 7100 IP Dispatch Console.

MCC 7100 IP Dispatch Console Software Requirements

The MCC 7100 IP Dispatch Console requires a Windows-based PC or workstation running at least Windows 7 Professional operating system.

Windows XP and Windows Vista operating systems are not supported.

Windows 8 64-bit operating system is supported only outside the ASTRO Radio Network Interface (RNI).

Note: Windows 7 Ultimate is supported but not required.

MCC 7100 IP Dispatch Console Hardware Requirements

The MCC 7100 IP Dispatch Console software is supported by the Motorola certified HP Z420 desktop computer. The software is also supported by a customer provided laptop or desktop computer meeting the minimum hardware requirements in *Table 9: Hardware Specifications – Customer Provided Laptop on page 38*.

Motorola Certified HP Z420 Hardware Specifications

The following hardware specifications are for the Motorola certified HP Z420 workstation:

Note: The HP Z400 workstation does not support the MCC 7100 IP Dispatch Console software.

Table 8: Hardware Specifications – HP Z420 Workstation

Hardware	Specification
Processor	Intel® Xeon E5-1603, 2.8GHz,1066Mhz memory, Quad Core
Chipset	Intel® C602
Hard Drive	250 GB 7200 rpm SATA 3.0 Gb/s NCQ
Hard Disk Controller	Integrated SATA controller
System Memory	4 GB total memory (2 x 2 GB DDR3 1600MHz ECC)
LAN	Integrated Intel 82579LM PCIe GbE Controller

Table continued…

Hardware	Specification
Optical Storage	16X SuperMulti DVDRW SATA
Keyboard	HP USB Standard Keyboard
Mouse	Microsoft Wheel Optical 3-button USB Mouse
Graphics	NVIDIA Quadro NVS 310 512MB Dual Head
Expansion Slots	2 PCI Express Gen3 x16 mechanical/electrical
	1 PCI Express Gen3 x8 mechanical/electrical
	1 PCI Express Gen2 x8 mechanical/x4 electrical
	1 PCI Express Gen2 x4 mechanical/x1 electrical
	1 Legacy PCI
Built-in I/O Ports	6 USB 2.0, 3 Serial, 1 Parallel
Power Supply	600W (90% efficient power supply)
Power Consumption	max 600W

Customer Provided Laptop Minimum Hardware Requirements

The following hardware specifications are the minimum requirements for a laptop provided by the customer.

Table 9: Hardware Specifications – Customer Provided Laptop

Hardware	Specifications
Processor	Intel® Core™ i5-560M Processor (2.66 GHz, 3 MB L3 cache)
System Memory	minimum 4 GB total memory
Hard Drive	minimum 320 GB internal drive
Optical Storage	minimum CD drive to install software
Expansion slots	1 USB 2.0 port per peripheral, 100Mb Ethernet
	Native SD Host controller bus Interface required when using hardware key storage

MCC 7100 IP Dispatch Console Cohab Configurations

You can install the MCC 7100 IP Dispatch Console as a standalone product or cohabited with other applications.

Important: Before you install the MCC 7100 IP Dispatch Console software, you must uninstall any prior installations of dispatch console software, for example, MCC 7500 Dispatch Console software. See the *MCC 7500 Dispatch Console with Voice Processor Module* manual for removing the MCC 7500 Dispatch Console software.

Note: The Local Alias Service Client is the only application that can be installed as an additional cohabited application.

Inside the ASTRO Radio Network Infrastructure (RNI), the following Cohab Applications are supported:

- K-core Configuration Manager
- ASTRO Advanced Messaging Solution Smart Client
- Radio Control Manager

- Local Alias Service Server
- Voting Control and Display Client
- Local Alias Service Client

Outside the ASTRO RNI, the following Cohab Applications are supported:

- ASTRO Advanced Messaging Solution Smart Client
- Local Alias Service Client

In the ASTRO 7.11 System, the following Cohab Applications are supported:

- K-core Configuration Manager
- ASTRO Advanced Messaging Solution Smart Client
- Radio Control Manager
- Local Alias Service Server
- Voting Control and Display Client
- Local Alias Service Client

In the ASTRO 7.13 System, the following Cohab Applications are supported:

- ASTRO Advanced Messaging Solution Smart Client
- Local Alias Service Server
- Local Alias Service Client

MCC 7100 IP Dispatch Console Call Capacities

The MCC 7100 IP Dispatch Console supports four capacities that are enforced by licensing. The capacities can also depend on the location of the dispatch console.

Table 10: MCC 7100 IP Dispatch Console Call Capacities

Maximum Number of Simultaneous Streams	Maximum Number of Resources Configured	Location	Voice Encryption
5	15	Inside ASTRO Radio Network Infrastructure (RNI) and outside ASTRO RNI	AES, DES-OFB, and ADP
10	30	Inside ASTRO RNI and outside ASTRO RNI	AES, DES-OFB, and ADP
15	45	Inside ASTRO RNI only*	AES, DES-OFB, and ADP
20	60	Inside ASTRO RNI only*	AES, DES-OFB, and ADP

* If you deploy a higher tier dispatch console outside the ASTRO RNI, the number of the simultaneous streams it supports is automatically downgraded to ten streams.

Dynamic System Resilience Considerations

Dynamic System Resilience (DSR) strengthens ASTRO®25 voice and data communications networks for greater redundancy to ensure operational continuity in the event of disaster. Each zone in a system with DSR is supported by two cores: a primary core and a geographically separate backup core. For more information, see the *Dynamic System Resilience* manual.

Warning: Dynamic System Resilience feature is not supported in ASTRO® 25 Conventional IV&D K1/K2 System.

When you install or upgrade a dispatch console in a system with DSR, the dispatch console must apply the DSR configuration to operate in the DRS mode. To enable the DSR mode, meet the following the requirements during the installation:

- Allow the dispatch console to apply the DSR configuration: Start the Elite application to receive the following critical change notification that appears in the status bar of the application: `Critical configuration parameters have changed. Please reboot the PC to utilize the updates.` At this point reboot the computer. Otherwise the dispatch console cannot apply the DSR configuration and operate in DSR mode, for example, it cannot operate when switching between the primary and backup Master Switching Office (MSO).
- Configure the primary and secondary DNS server addresses for both master sites: For the correct network settings, see *Setting Up the Domain for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI on page 60* and the system configuration documentation or contact Motorola Solution Support Center (SSC) for further assistance.

Note: The console site can operate seamlessly on the primary master site with some dispatch consoles in a DSR mode and others in non-DSR mode until the reboot of all dispatch consoles.

Setting Up the MCC 7100 IP Dispatch Console

Use the following process to install the MCC 7100 IP Dispatch Console in your system together with all the necessary system components on which it depends.

Prerequisites: If you use a system with Dynamic System Resilience (DSR), see *Dynamic System Resilience Considerations on page 39*.

Process:

1 Install and configure the Windows 7 operating system on the workstation that you want to use as a dispatch console:
   a) Run the Motorola Operating System Installer (MOSI). See *Windows Installation and Motorola OS Installer (MOSI) on page 41*.
   b) Configure Windows Components. See *Configuring Windows Components on page 41*.
2 Generate License Certificates for the MCC 7100 IP Dispatch Console. See *Generating License Certificates for the MCC 7100 IP Dispatch Console on page 46*.
3 Install the MCC 7100 IP Dispatch Console software. See *Installing the MCC 7100 IP Dispatch Console Software on page 47*.
4 Load secure keys and Algorithms. See *Load Secure Keys and Algorithms on page 49*.
5 Install third party or cohab software. See *Third Party or Cohab Software Installation on page 54*.
6 Install MOTOPATCH. See *MOTOPATCH Installation on page 55*.
7 Perform Windows Supplemental Configuration. See *Windows Supplemental Configuration on page 55*.
8 Configure Network Interface Card (NIC) on PC or server inside the ASTRO Radio Network Infrastructure (RNI). See *Configuring the Network Interface Card for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI on page 56*.
9 Setup the peripherals. See *Peripheral Configuration on page 57*.
10 Setup the network. See *Setting Up Network on page 59*.
11 **Only for dispatch consoles inside the ASTRO RNI:** Discover the MCC 7100 IP Dispatch Console in the Unified Event Manager. See the “Discovering Devices” procedure in the *Unified Event Manager* manual.

Windows Installation and Motorola OS Installer (MOSI)

Before you install the MCC 7100 IP Dispatch Console software, you must update the Windows 7 operating system with an approved service pack.

The installation of a fresh Windows 7 Professional operating system with an approved service pack is required to ensure proper operation. Motorola provides two different installations depending on the computer hardware.

- MOSI 64-bit installation DVD for Motorola purchased workstations (i.e., HP Z420).
- Windows 7 Professional OEM DVD for customer laptop installations.

Note: For Windows 7 OEM installations, customers are responsible for installing all required drivers.

Note: The following restrictions must be followed when naming a laptop during the installation of the Windows 7 operating system:

- Minimum length: 2
- Maximum length: 48
- Allowed numbers: [0–9]
- English letters: [a-zA-Z]
- Special characters: . –
- No leading and trailing spaces

Note: Workstations purchased from Motorola are imaged with the correct Windows 7 operating system and approved service pack. All required drivers are configured and installed. The MOSI installation and configuration (local or over-the-network) minimizes the wait time normally experienced during OS installations. The MOSI media is updated periodically to provide continual support for installations on Motorola purchased workstations. Information on using MOSI is available on the Motorola Online (MOL) web portal. See the MOSI media label or readme.txt for information regarding access to Motorola Online (MOL).

Configuring Windows Components

Before you instal the MCC 7100 IP Dispatch Console software, configure the general Windows 7 Professional operating system components.

Prerequisites: Install the required Windows 7 operating system with an approved service pack. See *Windows Installation and Motorola OS Installer (MOSI) on page 41* or contact the Motorola.

Note:

When and where to use: The general configuration of Windows 7 components is applicable for all MCC 7100 IP Dispatch Console installations, inside or outside the ASTRO Radio Network Infrastructure (RNI).

Process:

1. Set display properties. See *Setting Display Properties on page 42*.
2. Set power save properties. See *Setting Windows Power Options on page 42*.
3. Set up SNMP services. See*Setting Up SNMP Services Inside the ASTRO RNI on page 43*.
4. Configure SNMP Components for a console inside the ASTRO RNI. See *Configuring Windows SNMP Components for a Console inside the ASTRO RNI on page 43*.
5. Configure primary DNS suffix. See *Configuring Primary DNS Suffix on page 45*.

Setting Display Properties

The settings for screen resolution and color is dependent on the video adapter install on the PC. See the Windows 7 documentation or the PC manufacturer documentation for assistance with changing display settings.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Screen Resolution** pane.
2 In the **Resolution** drop-down menu, set the resolution to **1024x768** or greater.
The available options depend on the installed video adapter.
3 Click **Advanced settings**.
4 In the **Monitor** tab, from the **Colors** drop-down list, select **True Color (32 bit)**.
5 Click **OK** on all subsequent windows.

Setting Windows Power Options

The power options for Windows 7 must be set correctly to ensure uninterrupted operation. See the Windows 7 documentation or the PC manufacturers documentation for information regarding the steps for setting power options. The steps described in this procedure may not reflect recent updates to the operating system. For installations on HP laptop/workstation, disable the “HP Power Assistant Service”. See the relevant HP documentation for details.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Power Options** pane.
2 For the **Balanced (recommended)** plan, click **Change plan settings**.
3 Click **Change advanced power settings**.
Step result: The **Power Options** window appears.
4 Expand **Hard disk → Turn off hard disk after** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

5 Expand **Sleep → Sleep after** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

6 Expand **Sleep → Allow hybrid sleep** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Off**.
- If you use a desktop computer, from the **Setting** list, select **Off**.

7 Expand **Sleep → Hibernate after** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

8 Expand **Sleep → Allow wake timer** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Disable**.
- If you use a desktop computer, from the **Setting** list, select **Disable**.

9 Expand **USB settings → USB selective suspend setting** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Disabled**.
- If you use a desktop computer, from the **Setting** list, select **Disabled**.

10 Expand **Display → Turn off display after** and perform one of the following actions:
- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

11 Click **OK**.
12 Close the **Control Panel** window.

Setting Up SNMP Services Inside the ASTRO RNI

The services for Windows Simple Network Management Protocol (SNMP) are initially configured in Windows.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Programs and Features** pane.
2 From the left-hand menu, select **Turn Windows features on or off**.
3 In the **Windows Features** window, expand the **Simple Network Management Protocol (SNMP)** node.
4 Select the **WMI SNMP Provider** check box.
5 Click **OK**.

Configuring Windows SNMP Components for a Console inside the ASTRO RNI

The configuration of Simple Network Management Protocol (SNMP) allows the computer to receive SNMP trap messages. These message are then forwarded to SNMP management programs running on the computer.

When and where to use: Use this procedure for SNMP version 1 or 2 only. For SNMPv3 configuration, see the *SNMPv3* manual.

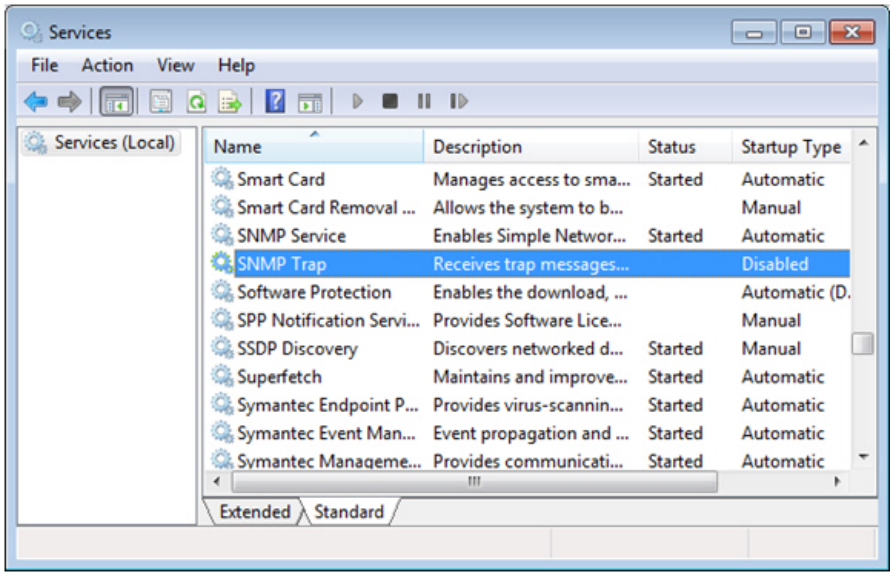
Note: The SNMP services are not available for a console deployed outside the ASTRO RNI.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Administrative Tools** pane.
2 Double-click **Services**.

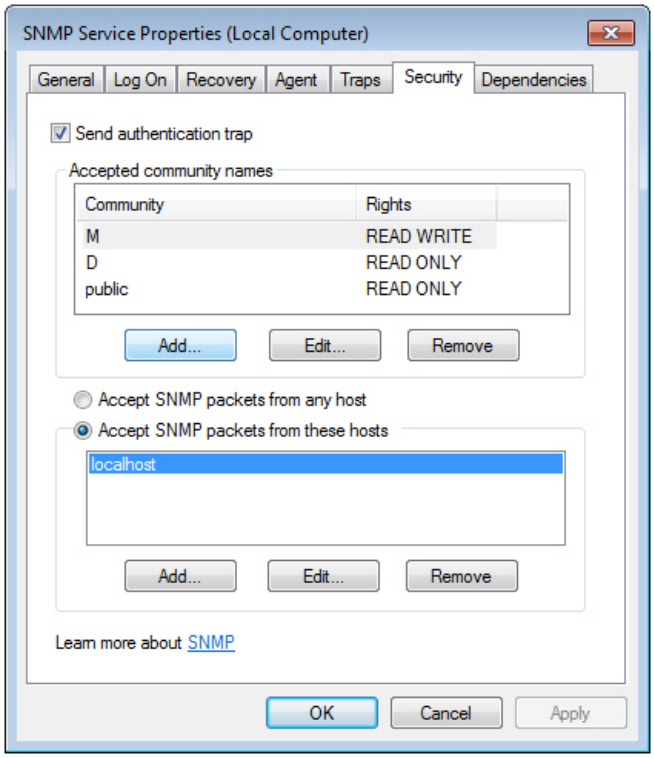
Note: If a **User Account Control** dialog box displays, click **Continue**.

Figure 2: Administrative Tools - Services



3 In the **Services** window, double-click **SNMP Trap**.
4 In the **General** tab of **SNMP Trap Properties** window, from the **Startup type** drop-down list, select **Disabled**. Click **OK**.
5 In the **Services** window, double-click **SNMP Service**.

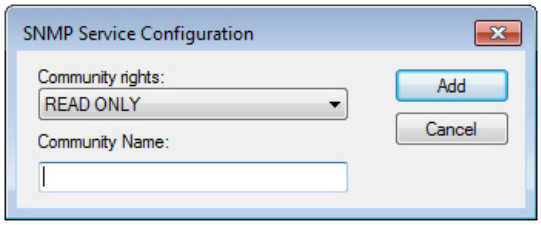
Figure 3: SNMP Service Properties



6 In the **Security** tab of the **SNMP Service Properties** window, ensure that **Send authentication trap** check box is selected.

7 In the **Accepted community names** section, click **Add**.

Figure 4: SNMP Service Configuration – Security



8 In the **SNMP Service Configuration** window, add a community:
   a) From the **Community rights** drop-down list, select **READ WRITE**.
   b) In the **Community Name** field, enter `M`.
   c) Click **Add**.

9 In the **SNMP Service Configuration** window, add another community:
   a) From the **Community rights** drop-down list, select **READ ONLY**.
   b) In the **Community Name** field, enter `D`.
   c) Click **Add**.

10 In the **SNMP Service Configuration** window, add one more community:
   a) From the **Community rights** drop-down list, select **READ ONLY**.
   b) In the **Community Name** field, enter `public`.
   c) Click **Add**.

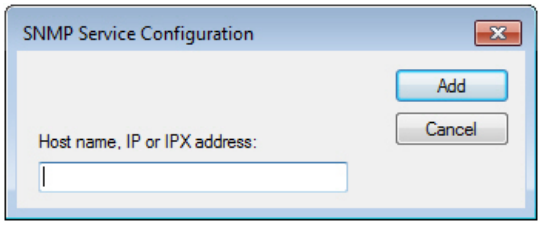
11 Select the **Accept SNMP packets from these hosts** radio button.

12 If localhost in not listed in the list of accepted hosts, perform the following actions:

a) Under the list, click **Add**.
b) In the **Host name, IP or IPX address** field, enter `localhost`. Click **Add**.

13 In the **Security** tab, click **Apply**.
14 In the **Traps** tab, in the **Community name** drop-down list, enter `M`. Click **Add to list**.
15 Under the **Trap destinations** list, click **Add**.

Figure 5: SNMP Service Configuration – Traps



16 In the **Host name, IP or IPX address** field, enter `127.0.0.1` and click **Add**.
17 In the **Traps** tab, click **Apply**.
18 Click **OK**.

Configuring Primary DNS Suffix

Configure the primary DNS suffix for an MCC 7100 IP Dispatch Console inside the ASTRO Radio Network Infrastructure (RNI).

Note: Do not follow this procedure for MCC 7100 IP Dispatch Consoles outside the ASTRO RNI. If you have an MCC 7100 IP Dispatch Console outside the ASTRO RNI that is on the CEN domain, verify that it meets one of the following conditions:

- They are installed in an ASTRO 7.11 system.
- They are installed in an ASTRO 7.13 system or later and the suffix was input as part of the hostname in the Provisioning Manager.

If it meets one of the following conditions, enter the DNS suffix for the ASTRO domain in the Console Status application of this console. See *ASTRO Domain Configuration on page 112*.

Procedure:

1 In the **Run** window of the Windows operating system, enter `sysdm.cpl` and press ENTER.
2 In the **Computer Name** tab, click **Change**.
3 In the **Computer Name/ Domain Changes** window, click **More**.
4 In the **DNS Suffix and NetBIOS Computer Name** window, perform the following actions:
a) In the **Primary DNS suffix for this computer** field,, enter the DNS suffix in the form of `nmd<XX>.zone<Y>`

where **<XX>** is the console site ID and **<Y>** is the zone ID.

Important: This DNS suffix naming convention is valid only for consoles inside the ASTRO RNI.

b) Clear the **Change primary DNS suffix domain membership changes** check box.
c) Click **OK**.
5 Close the **Control Panel** windows.
6 When prompt to restart the computer, click **Restart Later**.

Installing the .NET Framework 3.5 on the Windows 8 Operating System Outside the ASTRO RNI

Perform this additional procedure only if you use the Windows 8 operating system. The Windows 8 operating system comes with the .NET Framework, version 4.5. The MCC 7100 IP Dispatch Console software requires the .NET Framework, version 3.5.

Prerequisites: Locate the installation media form which you installed the Windows 8 operating system. The installation media can be a DVD-ROM or an ISO Image.

Procedure:

1 Open the command prompt window as an administrator.

For more information, see the Windows Help and Support online help.

2 Install the .NET Framework 3.5 from the `\sources\sxs` folder on the installation media by running the following command:
`DISM /Online /Enable-Feature /FeatureName:NetFx3 /All /LimitAccess /Source:`***`<.Net Framework 3.5 files location>`***

where ***`<.NET Framework 3.5 files location>`*** is the full path to the .NET files necessary to restore the feature, for example, `d:\sources\sxs`

Generating License Certificates for the MCC 7100 IP Dispatch Console

Use the following procedure to obtain a capacity license for the MCC 7100 IP Dispatch Console software and any other licenses for additional licensed features used with the consoles from the FlexNet Operations Portal.

Process:

1 Place the software order that includes the number of the MCC 7100 IP Dispatch Console licenses and the number of licenses for additional features to be used with the consoles.

2 Wait for an order fulfillment E-mail sent by Motorola.

The E-mail contains an Entitlement ID and instructions on how to acquire license files. If you do not have the Entitlement ID, you cannot access the server and obtain the license certification.

3 Log on to
`http://licensing.motorolasolutions.com`
.

Note: If you do not have a user account, use the Entitlement ID to create it. After you create the account, you receive an automated E-mail that contains a default password. The E-mail is sent to the registered E-mail address.

4 After you log on, manage, select, and activate all relevant entitlements.

The FlexNet Operations Portal guides you through the fulfillment process.

5 Configure the server host by either selecting an existing host or adding a new host.

When asked to configure a server host, enter the Ethernet MAC address for the target PC without dashes. The list of MAC addresses along with their associated network adapters can be found by running a Windows command prompt and entering `ipconfig /all` from the target PC.

Important: It is highly recommended that the MAC address selected in this step be the address associated with a permanent network adapter on the server. The licensing services could be adversely affected by choosing a network adapter that is frequently enabled or disabled.

6 Enter `1` for the fulfillment count.

Note: The fulfillment count is the number of licensed audio streams for the MCC 7100 IP Dispatch Console. The number of allowable audio streams is associated with the license and available in 5, 10, 15, or 20 streams.

7 After you review the license information, generate the license files and complete the process.

8 Manage the licences and either save the license files to the PC or send them in an E-mail.

You use the license files when prompted during the installation of the MCC 7100 IP Dispatch Console software.

Installing the MCC 7100 IP Dispatch Console Software

Use the following procedure to manually install the MCC 7100 IP Dispatch Console software. Before you install the MCC 7100 IP Dispatch Console software, ensure that you use Motorola recommended computers with the latest approved service pack.

Prerequisites:

Ensure that you meet the following requirements:

- The Windows PC or workstation on which you want to install the software is running Windows 7 Professional with an approved service pack;
- You have valid license files for the console.

During the installation, the CRYPTR micro install package installs an SD host controller driver. See *CRYPTR micro Installation Considerations on page 48*.

Procedure:

1 Log on to the Windows 7 operating system as an administrator.

2 If you upgrade from a previous version of the MCC 7100 IP Dispatch Console software, close the Elite Admin and Elite Dispatch applications and stop all third party software.

3 Insert the MCC 7100 installation media into the CD/DVD drive.

4 Double-click the `Setup.exe` file.

5 In the **User Account Control** window, click **Yes**.

Numerous command windows can open and close as prerequisite programs are installed.

6 From the welcome page of the Motorola MCC 7100 setup wizard, click **Next**.

7 From the next page, browse to the folder that contains the license files. Click **Next**.

By browsing for the license files you import them to a predefined location. If the license files already exist in the predefined location, you do not have to import them again. If you do not have the license files at the moment of installation, you can still continue. As long as the license files are not available in the predefined location, the Elite applications and other licensed application do not start. As soon as you copy the license files to the predefined location, you can start all the licensed applications.

8 Select the intended location to install the console software by performing the following actions:

If…	Then…
If you want to use the console software inside the Motorola Radio Network,	click **MCC 7100 IRNI**.
If you want to use the console software outside the Motorola Radio Network,	perform the following actions: **1** Click **MCC 7100 ORNI**. **2** Perform one of the following actions:

If…	Then…
	• If you install the software on a K-core system or the console is already configured with a primary DNS suffix that matches the `nmdXX.zoneY` format, click **Install**. • If you install the software on an M-core or L-core system and the DNS suffix is not configured, enter the required compatible ASTRO RNI domain for the configured console. **Note:** The ASTRO RNI domain must be appropriate for the platform configured in Network Manager and take the form of `nmdXX.zoneY`, where `XX` is the configured console site ID and `Y` is the configured zone ID.

9 Confirm that you agree to install the software and reboot the computer by clicking **Yes** in the confirmation window.

Step result: The computer reboots up to two times.

Related Links

Dynamic System Resilience Considerations on page 39

CRYPTR micro Installation Considerations

During the installation of the MCC 7100 IP Dispatch Console software, observe the CRYPTR micro installation considerations.

Note: Windows 8 64-bit operating system that you can install on dispatch consoles outside ASTRO Radio Network Infrastructure (RNI), does not support hardware-based encryption which is the CRYPTR micro device.

Perform the installation correctly:

- Place the CRYPTR micro in the SD slot before or after the installation of the MCC 7100 software. If you insert the CRYPTR micro in the SD slot after the MCC 7100 software installation completes, the CRYPTR micro driver installation completes at the time of insertion.
- A dialog box prompting to allow or cancel an installation from an unknown publisher appears during the installation. Select **Allow**.
- During the CRYPTR micro driver installation, messages appear to notify the user about the configuration and the resetting of the CRYPTR micro. No user interaction is required in response to these messages.
- On rare occasions, the CRYPTR micro driver installation cannot proceed without rebooting the computer immediately. If you reboot the computer, the MCC 7100 software installation fails and rolls back. Reboot the computer and restart the installation of the MCC 7100 software.

Resolve any issues you encounter:

- During the CRYPTR micro driver installation, the Microsoft's Standard Compliant SD Host Controller is possible to overwrite the EOM SD Host Controller Driver of the computer. As the result, the CRYPTR micro may stop working after a Windows operating system update. If the problem occurs, reinstall the CRYPTR micro driver by using the instructions in *SD Host Controller Driver Considerations (CRYPTR Failures) on page 72*.
- If the CRYPTRmicro software upgrade fails during installation, the following message appears: `CRYPTRmicro software upgrade failed. Use the CRYPTRmicroUpgrade application at a later time to upgrade the device.`. Use the CRYPTRmicroUpgrade application at a later time to ensure that the CRYPTR micro image is upgraded to the current version. For more information, see *CRYPTR micro Software Upgrade on page 64*.

Associated Windows Components Software Installation

Load Secure Keys and Algorithms

Note: This section is applicable only for secure-capable MCC 7100 IP Dispatch Console software installations.

In order to encrypt outgoing audio from an MCC 7100 IP Dispatch Console and decrypt incoming audio from other consoles and subscriber radios, the MCC 7100 IP Dispatch Console must have its talkgroups associated with encryption keys.

The association of talkgroups, patches, and MSEL with a secure key is configured in the ASTRO system Network Manager. Each key is assigned a Common Key Reference (CKR) that helps identify the key. The Network Manager associates a talkgroup or a special call type with a CKR. This information is downloaded from the Network Manager to the MCC 7100 IP Dispatch Console.

The key material for performing actual encryption and decryption is stored locally on the MCC 7100 IP Dispatch Console, either in the CRYPTR micro device or in the software key file. This key material is also associated with a CKR, so that the appropriate key can be selected for a given talkgroup or a special call type.

Note: Windows 8 64-bit operating system that you can install on dispatch consoles outside ASTRO Radio Network Infrastructure (RNI), does not support hardware-based encryption which is the CRYPTR micro device.

A CKR, Keyset, Key ID, Algorithm ID, and key material are stored for each key. The crypto administrator for your organization defines these values. These values are defined as common for all devices on an ASTRO system that need to communicate securely to one another. The crypto administrator initiates updates to the keys as needed using Over the Ethernet Keying (OTEK), keyloading the CRYPTR micro using a KVL, or distributing software key files.

Note: CKR and Keyset pairs must be unique. Duplicate CKR to Keyset pairs are not allowed by the tools and device, since the combination of CKR and Keyset uniquely identifies how audio is encrypted on a talkgroup.

On MCC 7100 IP Dispatch Console, the secure keys are stored in one or more software key files located on the console or on the CRYPTR micro card. The two configurations are mutually exclusive. During startup, MCC 7100 IP Dispatch Console first checks for the presence of the CRYPTR micro hardware storage device. If absent, the MCC 7100 IP Dispatch Console checks for the presence of one or more software key files. If neither one is present, the MCC 7100 IP Dispatch Console cannot support secure communication. In this case, the Console Dispatch Status application reports that it is configured for hardware encryption mode, but the CRYPTR micro device is not present. To check the secure status of an MCC 7100 IP Dispatch Console, see *Console Dispatch Status (MCC 7100 IP Dispatch Console) on page 109* for details.

Hardware Key Storage (CRYPTR micro)-Based Encryption

In this mode of operation, the encryption keys are stored on a SDIO-based secure device CRYPTR micro. The CRYPTR micro is inserted into the SD slot of an MCC 7100 IP Dispatch Console and can be left there throughout laptop reboots and MCC 7100 IP Dispatch Console software installations.

Note:

Windows 8 64-bit operating system that you can install on dispatch consoles outside ASTRO Radio Network Infrastructure (RNI), does not support hardware-based encryption which is the CRYPTR micro device.

On certain laptops, the CRYPTR micro must be removed after a reboot and then reinserted. This behavior is dependent on specific peripheral hardware installed in the laptop. See *Troubleshooting Detection of CRYPTR micro Device on page 73* for details.

The device has a form factor of a microSD card and uses a microSD to SD adapter in order to fit into the SD slot of a PC.

Figure 6: microSD to SD Adapter

Encryption keys stored on the CRYPTR micro have the following information:

- Common Key Reference (CKR)
- Keyset
- Key ID
- Algorithm ID
- Key Material

Keyset information is also store on the CRYPTR micro. The MCC 7100 IP Dispatch Console reads this information from the CRYPTR micro when the dispatch application starts up. It then associates each key with a talkgroup or a call type (MSEL, Patch) by matching the CKRs. If a match is successfully found for a talkgroup or a call type, the MCC 7100 IP Dispatch Console is able to make secure calls on that talkgroup and able to decrypt incoming audio. If a match is not found, the Dispatch Console reports key failure during an attempt to use that talkgroup in secure mode.

A CRYPTR micro does not have any keys following an initial installation or an upgrade. There are two methods of loading keys onto the CRYPTR micro:

Note: Before ejecting the CRYPTR micro, close all applications that use the CRYPTR micro. Eject it using the Windows Safely Remove Hardware feature in the desktop tray. The name for the CRYPTR micro device is “`generic SDIO device`".

1 For keyloading using a Key Variable Loader (KVL 4000), eject the CRYPTR micro from the MCC 7100 IP Dispatch Console and insert it into the KVL 4000 using a keyloading cable for CRYPTR micro.
2 Use the KVL 4000 user interface to program the needed keys into the CRYPTR micro. Then, reinsert the CRYPTR micro into the MCC 7100 IP Dispatch Console and restart the MCC 7100 IP Dispatch Console Dispatch.

Important:

CRYPTR micro is a device introduced in at the end of 2012. The programming and hardware key management of the CRYPTR micro can **only** be done by using the KVL 4000 Version B. KVL 4000 Version B (T7537B) is **required** and consists of two components which are PDA MC55A0 and the Security Adapter NTN2564B. To determine the correct KVL 4000 version, ensure that it meets the following requirements:

- PDA: The label **must** read: MC55A0. The information is located on the back of the PDA. To read the information, remove the battery.
- Security Adapter: The label **must** read: T7537B. The information is located on the back of the Security Adapter.

Previous versions of the KVL 4000, Version A (T5737A), are **not** compatible with this feature and **no** upgrade options are available. Owners of the KVL 4000 Version A must purchase KVL4000 Version B (T5737B - PDA MC55A0 and the Security Adapter NTN2564B) to support this feature. See the KVL product documentation for the most recent information.

In addition, TKN1039A cable is **required**. This cable is used to interface the KVL 4000 to the CRYPTR micro.

Note: See the *KVL 4000 ASTRO 25 User Guide* to perform key loading.

Figure 7: KVL 4000 Model T7537B with CRYPTR micro Keyloading Cable

Encryption keys on the CRYPTR micro can be automatically updated when centrally managed by a Key Management Facility (KMF). A KMF can be present in the ASTRO network and configured to manage a particular CRYPTR micro.

Note: A KMF may be located inside or outside the ASTRO RNI. If located outside the ASTRO RNI, see *Configuring the Local Hosts File for Consoles in Conventional K1/K2 Systems and Outside the ASTRO RNI on page 61* for details.

A CRYPTR micro must also be pre-configured to accept updates from a particular KMF. A crypto administrator configures the CRYPTR micro, using a KVL: Individual RSI is the ID of the CRYPTR micro itself, KMF RSI is the ID of the KMF that manages keys on the CRYPTR micro. *See Key Management Facility* manual.

A crypto administrator can perform initial key provisioning using the Store and Forward procedure on the CRYPTR micro as follows:

1 Connect a KVL 4000 to the KMF and download encryption keys for a CRYPTR micro to the KVL 4000.
2 Insert a CRYPTR micro into the KVL 4000 with the CRYPTR micro keyloading cable.
3 Initiate a Store and Forward procedure from the KVL 4000. See the *KVL 4000 ASTRO 25 User Guide* .
4 Reconnect the KVL 4000 back to the KMF and upload responses from the CRYPTR micro back to the KMF.

Once this is configured and the CRYPTR micro is inserted in the MCC 7100 IP Dispatch Console, the CRYPTR micro can accept Over the Ethernet Keying (OTEK). OTEK can take place when the MCC 7100 IP Dispatch Console is operational, no Elite restart necessary.

For security reasons, the MCC 7100 IP Dispatch Console software logs into the CRYPTR micro every time the dispatch application is started. During normal operation, the login process takes place without user intervention.

Manual password reset is required when the CRYPTR micro is newly programmed and its password is defaulted. The default password for the User account is `CryptrAdmin12345`. The default password for the Admin account is also `CryptrAdmin12345`.

To change the passwords, use the CRYPTRmicroManagement application. After you use the CRYPTRmicroManagement to update the password on the CRYPTR micro, it also securely writes in the new password, so that from that point on, automatic logins into the CRYPTR micro can take place.

For status of the CRYPTR micro, refer to the Encryption/Licensing tab of the Console Dispatch Status application. Specifically, mismatched and default passwords errors are reported in the Console Dispatch Status application. For more information, see *Console Dispatch Status (MCC 7100 IP Dispatch Console) on page 109*.

Note:

If recovering from a backup installation, the previously saved password vault files must be recovered and imported again. To recover and import, log on as an administrator, open a command prompt and execute the following command:

```
C:\Program Files (x86)\Motorola\PWVault\pwvadmin.exe import -app
APP_GROUP_CRYPTO -fpath <PATH>
```

where `PATH` is the directory and filename where the files were backed up.

Software Keyfiles-Based Encryption

In this mode of operation, the encryption keys are stored in one or more files on the MCC 7100 IP Dispatch Console. The key files's format is XML. The key files can be generated by the KMF and manually transferred to the MCC 7100 IP Dispatch Console. Or, they can be generated by the Keyfile Generation tool right on the MCC 7100 IP Dispatch Console or another computer, and manually transferred to the MCC 7100 IP Dispatch Console.

Encryption keys stored on software keyfiles have the following information:

- Common Key Reference (CKR)
- Keyset
- Key ID

- Algorithm ID
- Key Material

Note: The Key Management Facility does not support ADP keys.

Keyset information is also store on software keyfiles. The MCC 7100 IP Dispatch Console reads this information from the software keyfiles when the dispatch application starts up. It then associates each key with a talkgroup or a call type (MSEL, Patch) by matching the CKRs. If a match is successfully found for a talkgroup or a call type, the MCC 7100 IP Dispatch Console is able to make secure calls on that talkgroup and able to decrypt incoming audio. If a match is not found, the Dispatch Console reports key failure during an attempt to use that talkgroup in secure mode.

Note: If Secure/Crypto keys need to be loaded after an installation or upgrade of an MCC 7100 IP Dispatch Console software, they can be reloaded at any time after the MCC 7100 IP Dispatch Console software is installed. A restart of the dispatch application is required to make use of any updated loaded keys.

The **Key Store** button in the Console Dispatch Status application launches the keystorage directory in Windows Explorer, where the key files are placed. Up to 10 files will be read in, from the newest to the oldest. Errors will be reported in the Event Viewer if the key files format and contents do not pass strict validation rules. Since key files are not created manually, but with the use of the KMF or the Keyfile Generation application, most of the validation rules are enforced by both key entry tools. Additional errors that can happen but cannot be enforced by the key entry tools include:

- Exceeding total supported number of keys across all key files (500)
- Exceeding total supported number of ADP keys across all key files (8)
- Inability to decrypt contents of encrypted keys (no KEK/invalid KEK in the MCC 7100 IP Dispatch Console)
- Conflicting entries across multiple key files: entries with the same CKR and Keyset values. The key from the newer keyfile is kept and the duplicate entry from an older keyfile is ignored.
- Conflicting entries across multiple key files: conflicting keyset names and which one is active. In this case, data from the newer keyfile is kept and a conflicting entry from an older keyfile is ignored.
- There are no keyfiles and thus no keys following an initial installation or an upgrade.

A KMF can manage the MCC 7100 IP Dispatch Console in software encryption mode by generating keyfiles, which then are copied to the MCC 7100 IP Dispatch Console. OTEK is not supported when using software based key storage. In order to generate a keyfile on the KMF, the crypto administrator creates a group of keys on the KMF and exports it to an XML key file. For details of this procedure, see *Key Management Facility* manual. In this case, each key entry in the file will be encrypted with a Common Key Encryption Key (CKEK). The crypto administrator must distribute the CKEK to the MCC 7100 IP Dispatch Console, for the MCC 7100 IP Dispatch Console to be able to decrypt the key(s). The MCC 7100 IP Dispatch Console can store up to 20 CKEKs. The following is an example of the command to execute on the MCC 7100 IP Dispatch Console in order to store a CKEK:

1 Log on as an administrator.
2 Open a command prompt and execute the following command:

```
pwvadmin changeproperty -app APP_GROUP_CRYPTO -property keyfile_KEK1 -value
"Algid=AES256,KeyID=0xF5A1,Key=0x01010101010101010101010101010101010101010101
10101010101010101010101"
```

The format of this command includes password property name “keyfile_KEK1”, “keyfile_KEK2”, …, “keyfile_KEK20”. The command also includes the name of the algorithm, keyed, and the key material. The order of parameters and spacing between them must be adhered to for the key to be properly stored.

Backing up and restoring the KEKs in the MCC 7100 IP Dispatch Console is essential for restoring secure communications after an upgrade. However, if you only use clear key files or the CRPYPTRmicro, there is no need for storing KEKs in the MCC 7100 IP Dispatch Console.

If secure communications in the MCC 7100 IP Dispatch Console are not managed by a KMF, encryption keys are entered manually in a spreadsheet and then exported as an XML file. The MCC 7100 IP Dispatch Console comes with a macros-enabled spreadsheet KeyfileGen.xlsm.

Open Software Keyfiles using Excel

KeyfileGen.xlms can be opened using Microsoft Excel or OpenOffice. Macros need to be enabled. If KeyfileGen.xml is to be used on a computer other than the MCC 7100 IP Dispatch Console where it was installed, it may be copied to another computer. In this case, the schema file ikmf-app-file.xsd must be copied with it and placed in the same folder.

The spreadsheet has a sheet for entering up to 500 keys and a sheet for entering two keysets. Enter the CKR, Keyset ID, KeyID, Algorithm and key data in clear (unencrypted). The spreadsheet enforces ranges of data as follows:

- CKR from 0 to 4095
- Keysets 1 and 2
- Key ID from 0000 to FFFF (hex values, leading 0s required)
- Encryption Algorithms limited to AES256, DES, ADP
- Key Material length as appropriate for the algorithm
- Odd parity per byte for DES keys
- Total number of keys (500)

Note: Keys generated by the KeyfileGen tool are not encrypted. Use the “Keysets” sheet to enter keyset names and select which keyset is active.

Important: All the features of Microsoft Excel to copy data across keys and keysets are supported. However, do not delete rows as the number of keys is restricted to 500 and the number of keysets is exactly two. You can also save the spreadsheet for later use.

If a row on the “Keys” sheet has a blank CKR field, this row is ignored and will not be exported to the XML file.

If ADP keys are used, always set their keyset to “1”. ADP keys have no concept of keysets. You may keep default values in the “Keyset” sheet, unless there are DES and/or AES256 keys, which truly use keysets.

Export the XML file by pressing the “Validate and Save” button on top of the “Keys” sheet. If the button cannot be pressed, you may need to enable macros in Excel.

Note: If any of the keys or keysets cannot be validated, the XML file will not be generated and an error message will be displayed. You can then correct the problem and attempt to export the XML file again.

Some of the errors detected during validation are:

- Invalid parity for DES keys
- Length of key material not matching what the algorithm requires
- Duplicate CKR/Keyset pairs
- Maximum number of ADP keys exceeded

Note: From the Console Dispatch Status application, click **KeyStore** under the *Encryption/Licensing* tab to open the keystorage directory where the keyfiles are to be stored.

XML files containing keys can also be imported into KeyfileGen.xlsm. To import, open KeyfileGen.xlsm, right-click on a cell and select **XML → Import**, then browse to the file. Changes can be made and export the updated file using the “Validate and Save” button.

Third Party or Cohab Software Installation

After you install the MCC 7100 IP Dispatch Console software and load secure keys and algorithms, you can install the certified third party or cohab software, for example, McAfee antivirus, Motorola’s Syslog, and Motorola’s MOSCAD FSA application.

Because each system is different, the certified applications for the specific system may be unique and not all software is compatible. See the system planner for the specific applications and configuration of the third party and cohab software for the system.

Some third party or cohab software may require a network connection to complete or configure its application. Then, you must revisit these actions after you establish the network connection, for example, when you recover or set up a new MCC 7100 IP Dispatch Console.

In all cases, see the appropriate third-party installation manuals.

Note:

For an outside the ASTRO RNI MCC 7100 IP Dispatch Console installation, special considerations must be made when installing other software, and when running other software at the same time as the MCC 7100 IP Dispatch Console application.

These considerations include the following issues:

- High CPU usage
- High network utilization
- High disk usage
- High priority anti-virus scans
- System restore
- Audio processing
- Multimedia applications

Running these types of programs at the same time as the MCC 7100 IP Dispatch Console may disrupt the audio performance of the MCC 7100 IP Dispatch Console application so you must minimize it or avoid it if possible.

MOTOPATCH Installation

Ensure that the correct Windows 7 Professional operating system service pack is installed before inserting and opening the *MOTOPATCH for Windows* DVD. See the instruction in the `README.txt` file included in the the *MOTOPATCH for Windows* DVD.

Windows Supplemental Configuration

The ASTRO® 25 Windows Supplemental CD is used to install specific Windows supplemental files using a Windows Install Framework script.

Important: The Windows supplemental installations must be reinstalled when upgrading/installing the MCC 7100 IP Dispatch Console software, when the Windows Supplemental CD changes, or when reinstalling the operating system.

Note: Before processing, ensure that any cohab applications are installed prior to applying the Windows Supplemental CD.

The installation of the Windows Supplemental CD is only required for an MCC 7100 IP Dispatch Console inside the ASTRO RNI in a K-core system.

For an MCC 7100 IP Dispatch Console outside the ASTRO RNI, the following supplemental configuration template must be executed from the Windows Supplemental CD:

- `\\Windows Security Configurations\Scripts\AHT\MCC 7100 IP Console Outside RNI\ApplyAHT.exe`

For an MCC 7100 IP Dispatch Console outside the ASTRO RNI that is joined to a CEN domain, then the **MCC 7100 IP Consoles Outside RNI** Group Policy Objects can be imported from the `\\ActiveDirectory\data\GPO` folder on the Windows Supplemental CD and linked to the appropriate Organizational Unit on the CEN domain controller.

Note:

The supplemental configuration template and GPO for an MCC 7100 IP Dispatch Console outside the ASTRO RNI will disable the Windows system restore feature. System restore has the potential to disrupt the audio of an active call when a system restore point is initiated.

For best performance of the MCC 7100 IP Dispatch Console application, it is recommended to leave system restore disabled. However, if system restore is required, then it should be scheduled while the MCC 7100 IP Dispatch Console application is shutdown or during off hours, when it could cause the least amount of disruption to dispatch operations.

.

Note: See the *Windows Supplemental Configuration* manual for installation procedures.

The following optional component is installed from the Windows Supplemental CD:

- Event Logging Client (Syslog) - logging.xml

All other required components are installed automatically from the MCC 7100 IP Dispatch Console installation.

Network Interface Card (NIC) Configuration

The configuration of the network interface card on the PC must be modified to support the console proxy.

Note: The IP address of the console PC directly affects SNMPv3 functionality. Modifying the IP address of the console PC for any reason after its initial setting may require SNMPv3 user credentials on the PC be reset. See the *SNMPv3* manual for details.

Configuring the Network Interface Card for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI

The Network Interface Card (NIC) enables communication of an MCC 7100 IP Dispatch Console inside the ASTRO RNI. The configuration of the NIC is only required for new installations and as part of the disaster recovery process.

Note: The steps provided in this procedure are intended as a guide and may not reflect recent updates to the Windows 7 operating system. See the relevant Microsoft operating system documentation or the computer manufacturer's documentation for specific help on how to configure the network interface card.

Prerequisites: Acquire the following DNS network settings:

- List of DNS server IP addresses
- List of DNS suffixes
- An Ethernet network cable

Note: See the system configuration documentation (provided by Motorola) for the correct network settings and relevant lists of DNS server IP addresses and DNS suffixes, otherwise contact Motorola Solution Support Center (SSC) for further assistance.

When and where to use: Configure the Network Interface Card (NIC) on the PC or server running the MCC 7100 IP Dispatch Console software inside the ASTRO RNI.

Note: In Windows 7, the Local Area Connection icon in Managed Network Connections may indicate that the network connection is partially available (yellow triangle with an exclamation mark) even though there is network connectivity to the ASTRO Radio Network Infrastructure (RNI). This icon may indicate partial availability when there is no connection from the ASTRO RNI to the external internet, which is a typical system configuration.

Procedure:

1 Log on to the Windows 7 operating system as an administrator.

2 Connect the Ethernet network cable between the dispatch console computer and the ASTRO RNI network.

3 In the **Control Panel**, navigate to the **Network and Sharing Center** pane.
4 From the left-hand menu, select **Change adapter settings**.
5 If the **Local Area Connection** is disabled, right-click it. Select **Enable**.
6 Right-click **Local Area Connection**. Select **Properties**.

Step result: The **Local Area Connection Properties** window appears.

7 Under the **Connect using** field, click **Configure**.
8 In the **Network Connection Properties** window, select the **Advanced** tab.
9 From the **Property** list, select **Link Speed & Duplex**.
10 From the **Value** drop-down list, select one of the following options:

- If you use a computer purchased from Motorola, for example HP Z420, select **100 Mb Full**. Click **OK**.
- If you use other computer, select **100 Mbps/Full Duplex**. Click **OK**.

11 Right-click **Local Area Connection**. Select **Properties**.
12 Double-click **Internet Protocol (TCP/IPv4)** and perform the following actions:

Important: Do not use (TCP/IPv6) to configure Internet protocols.

a) In the **General** tab, select the **Use the Following IP address** option.
b) In the **IP address**, **Subnet mask** and **Default gateway** fields, enter values provided for this network interface card.
c) Select the **Use the following DNS server addresses:** option.
d) Click **Advanced**.
e) In the **Advanced TCP/IP Settings** window, select the **DNS** tab.
f) Under the **DNS server addresses in order of use** list, click **Add**.
g) In the **TCP/IP DNS Server** window, enter the DNS server address. Click **Add**.
h) Repeat *12.f on page 57* and *12.g on page 57* for each DNS server in the order of use.
i) Select the **Append these DNS suffixes (in order):** option.
j) Under the list of DNS suffixes, click **Add**.
k) In the **TCP/IP Domain Suffix** window, enter the domain suffix. Click **Add**.
l) Verify that **Register this connection's addresses in DNS** check box is selected.
m) In the **WINS** tab, verify that the **Enable LMHOSTS lookup** check box is **not** selected.
n) On all subsequent windows, click **OK**.
o) When prompted to reboot, click **No**.

13 Connect a network interface cable to the network interface card.

Peripheral Configuration

During the installation, the MCC 7100 IP Dispatch Console software automatically configures the input (internal microphone) and output (external speakers) of the console computer as the source for voice and audio. These settings are saved as the default profile in the Peripheral Configuration Tool.

See the following procedures that you perform in the Control Panel of the Windows operating system if you want to modify the following settings:

- If you want to modify the default profile in the Peripheral Configuration Tool.

Note: You can modify the Peripheral Configuration Tool default profile only from the Windows operating system level. If you modify the profile in the Peripheral Configuration Tool, you can only save it as a new profile. You cannot save changes to the default profile.

- If you want to disable a specific peripheral connected to the computer. In this way you prevent it from appearing in the Peripheral Configuration Tool and being available to Windows operating system as a selectable default audio device.

- If you want to enable a specific peripheral connected to the computer. In this way you get it available in the Peripheral Configuration Tool and to Windows operating system as a selectable default audio device.
- If you want to disable feedback for headset devices. Feedback in a headset device appears when audio spoken into the headset microphone is played back into the headset speaker.

To create new configurations in the Peripheral Configuration Tool or perform more advanced configuration, see the Peripheral Configuration Tool instructions.

Related Links

MCC 7100 Peripheral Configuration Tool on page 116

Modifying the Default Audio Peripherals

You can modify the audio peripherals settings initially configured during the installation of the MCC 7100 IP Dispatch Console software only within the Windows operating system. This modification changes the default profile created by the Peripheral Configuration Tool. You cannot delete the profile or modify it within the Peripheral Configuration Tool.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Sound** window.

2 In the **Playback** tab, from the list of connected audio devices, select the device that you want to be the default device. Click **Set Default**.

Note: If the Peripheral Configuration Tool is in the default mode, the default speakers automatically switch to the new devices.

3 In the **Recording** tab, from the list of connected audio devices, select the device that you want to be the default device. Click **Set Default**.

4 Close all subsequent windows.

Disabling/Enabling Audio Devices in Windows

A dispatcher can permanently disable audio services configured in the Windows operating system. Depending on the MCC 7100 IP Dispatch Console installation, it may be necessary to disable unused devices such as a line-in audio jack. This prevents the device from being listed and mapped in the Peripheral Configuration Tool or available to the Windows operating system as a selectable default audio device.

Note: If the Elite application is started when you perform this procedure and the device that you disable is currently mapped to a peripheral, the audio is lost.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Sound** window.

2 To disable or enable a speaker, select the **Playback** tab and perform the following actions:

a) Select the device from the list of connected audio devices.

b) Right-click the device and select **Disable** or **Enable**.

3 To disable or enable a microphone, select the **Recording** tab and perform the following actions:

a) Select the device from the list of connected audio devices.

b) Right-click the device and select **Disable** or **Enable**.

4 Close all subsequent windows.

Disabling Feedback Audio for Headset Devices

In the Windows operating system, a connected USB headset by default plays audio spoken into the headset microphone back into the headset speaker. You must turn off this option if the Peripheral Configuration Tool includes headset peripherals.

The headset device may be labeled as **Speakers**. See the description of the device for details.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Sound** window.
2 In the **Playback** tab, select the connected audio headset device.
3 Click **Properties**.
4 In the **Levels** tab, click the speaker icon.
5 Click all subsequent windows.

Setting Up Network

Process:

Setup network for the dispatch console that you installed by performing the following actions:

If…	Then…
If you set up network for a console inside the ASTRO Radio Network Infrastructure (RNI) in an M-core or L-core system,	perform the following actions: 1 Set up the domain for the console. See *Setting Up the Domain for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI on page 60*. 2 Optional: Configure credentials for Secure SNMPv3 Common Agent. See *Credentials for Secure SNMPv3 Common Agent (Optional) on page 62*.
If you set up network for a console inside the ASTRO RNI in a Conventional K-core system,	perform the following actions: 1 Configure the local `hosts` file for the console. See *Configuring the Local Hosts File for Consoles in Conventional K1/K2 Systems and Outside the ASTRO RNI on page 61*. 2 Configure the External NTP Time Source for the console. See *Configuring the External NTP Time Source on Consoles in ASTRO 25 Conventional K1/K2 System on page 62*. 3 Optional: Configure credentials for Secure SNMPv3 Common Agent. See *Credentials for Secure SNMPv3 Common Agent (Optional) on page 62*.
If you set up network for a console outside the ASTRO RNI,	perform the following actions: 1 Set up a proxy server connection. See *Setting Up a Proxy Server Connection Outside the ASTRO RNI on page 59*. 2 Configure the local `hosts` file for the console. See *Configuring the Local Hosts File for Consoles in Conventional K1/K2 Systems and Outside the ASTRO RNI on page 61*. 3 Add the console to the ASTRO DNS server. See *Adding a Remote Console to the ASTRO DNS Server on page 63*.

Setting Up a Proxy Server Connection Outside the ASTRO RNI

Remote MCC 7100 IP Dispatch Consoles must be configured to connect to the PRX 7000 Console Proxy located inside the ASTRO Radio Network Infrastructure (RNI). The IP address (or hostname) for the PRX 7000 Console Proxy is referring to the IP address of the server that is assigned in the Customer Enterprise Network and not the ASTRO RNI configured IP address.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Console Status**.
2 Select the **Proxy Sever List** tab.
3 Click **Add** to create a new proxy server entry.

4 In the **Host IP** field, enter the ***<hostname>*** or ***<IP address>*** for the PRX 7000 server.

Note: When using an IP address, use the NAT'd IP address of the CEN for the PRX 7000 Console Proxy. The proxy server is only included if a proxy is configured by hostname in the Console Dispatch Status application.

5 Enter a text string to uniquely identify each proxy server entry.
Step example: `Site 55 Server`

6 Click **Save**.

Setting Up the Domain for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI

After you configure the IP and DNS information of the dispatch console, the MCC 7100 IP Dispatch Console is added to the console site Active Directory domain.

Prerequisites: Configure the DNS server IP addresses and DNS suffixes. See *Configuring the Network Interface Card for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI on page 56*.

Note: A domain administrator account and password associated with this domain account are required to join the Active Directory domain. For additional domain authentication information, see the *Authentication Services* manual.

Important: It is highly recommend that the user apply a secure password to the Administrator account at this time. Failure to do so may result in a security breach. Follow standard Microsoft procedures to change the password on this account.

Procedure:

1 In the Windows operating system, navigate to ***<systemdrive>*****\Program Files (x86)\Motorola\AAA\bin**

2 Double-click **JoinADomain.exe**.

Note: If the Active Domain (AD) cannot be found, manually enter the domain name.

3 If the **User Account Control** window appears, click **Yes**.

4 In the **Join Active Directory Domain** window, enter the ***<user name>*** and ***<password>*** for the domain account used to join the Windows-based device to the active directory domain.

Step result: The Organization Unit (OU) selection gets updated.

5 From the **Organization Unit (OU)** drop-down list, select the relevant organization unit.

The basic OUs are:

- Windows 7 MCC 7100 IP Consoles
- Windows 7 MCC 7100 IP Consoles with Ext Voice Encryption
- Windows 7 MCC 7100 Patch IP Consoles
- Windows 7 MCC 7100 Patch IP Consoles with Ext Voice Encryption
- Windows 7 MCC 7100 Patch OP Testing

6 Click **Join**.

Note: Once your computer has joined the domain, the local administrator account (not the domain account) is renamed to `MotoSec`.

7 When prompted to reboot, click **Yes**

8 Log on to the Windows operating system with a domain account and perform a group policy update:

a) In the **Start** menu search box, enter `cmd`.
b) From the list of results, right-click **cmd** and select **Run as administrator**.
c) When prompted in the **User Account Control** window, select **Yes**.
d) In the command prompt window, enter `gpupdate /force` and wait for the operation to complete.

e) Close the command prompt window.
f) Reboot the computer.

Configuring the Local Hosts File for Consoles in Conventional K1/K2 Systems and Outside the ASTRO RNI

A conventional K1/K2 system is a conventional system that contains no core so no Zone Controller (ZC), Unified Event Manager (UEM), and Domain Controller are available in this system.

You perform all configurations by using the Configuration Manager application. Call processing is handled through conventional site controllers. No DNS exists in the system.

Similarly, for an MCC 7100 IP Dispatch Console located outside the ASTRO Radio Network Infrastructure (RNI), the DNS configuration in the Customer Enterprise Network (CEN) may or may not contain the proper DNS entries for the key ASTRO RNI devices.

To make it possible for the installed MCC 7100 IP Dispatch Console software to continue using DNS APIs, edit the local `hosts` file.

Prerequisites: In the Windows operating system of the PC on which you installed the dispatch console, navigate to `C:\Windows\System32\drivers\etc` and create a backup copy of the `hosts` file.

Procedure:

1 In the Windows operating system of the PC on which you installed the dispatch console, navigate to the Notepad editor.

Instead of the Notepad editor, you can use a different editor, for example, Notepad ++.

2 Right-click the editor and select **Run as administrator**.

3 From the editor, navigate to `C:\Windows\System32\drivers\etc\hosts`

4 In the `hosts` file, map the IP addresses to the host name for the listed devices.

Perform this step by following the instructions in the `hosts` file and the tips in this step.

Zone Controller (Site Control Path)

Include the hostname and the **actual** IP address. Do **not** use fully-qualified host names.

Example:

```
10.5.231.255scp1
10.5.232.255scp2
```

Conventional Site Controller

Include the hostname and the **actual** IP address. Use fully-qualified host names.

Example:

```
10.5.55.95 z005s055csc01.nmd55.zone5
```

MOSCAD RTU

Include the hostname and the **NAT'd** IP address. Use fully-qualified host names.

Example:

```
172.76.9.243 rtu1.nmd13.zone5
```

KMF Server

Include the hostname and the **NAT'd** IP address. Use fully-qualified host names.

Example:

```
172.76.9.1kmf01.cen1
```

CAM Server (ELAM feature)

Include the hostname and the **NAT'd IP** address. Do **not** use fully-qualified host names.

Example:

```
172.76.9.140 z1nmd55cam1
```

LDAP Server

Include the hostname and the **NAT'd** IP address. Do **not** use fully-qualified host names.

Example:

```
172.76.9.101 zds01
```

Proxy Server

Include the hostname and the **NAT'd IP** address. The hostname must exactly match the hostname configured in the Console Status application.

Example:

```
172.76.9.3 Proxy1
```

Note: Include the IP address and hostname for the proxy server in the Customer Enterprise Network (CEN). The proxy server is only included if a proxy is configured by hostname with the use of the Console Dispatch Status application. See *Adding a Proxy Server Connection on page 112*.

5 Save changes to the `hosts` file.

Configuring the External NTP Time Source on Consoles in ASTRO 25 Conventional K1/K2 System

A **`net time`** command is used to configure the external time source for an MCC 7100 IP Dispatch Console in K-core systems.

Procedure:

1 In the **Run** window of the Windows operating system, enter `cmd` and press ENTER.

2 In the **DOS** command window, enter `net time /setsntp:<IPAddress>`.

Note: Since no domain controller exists in a K1/K2 system, you must use an IP Address instead of a hostname.

3 Press ENTER.

Credentials for Secure SNMPv3 Common Agent (Optional)

You set up or restore the secure SNMPv3 credentials only for an MCC 7100 IP Dispatch Console inside the ASTRO Radio Network Infrastructure (RNI). Read the following topic to learn about the rules to follow when you use SNMPv3 credentials.

The IP address of the dispatch console directly affects SNMPv3 functionality. If you modify the IP address after its initial setting, it can require that you reset the SNMPv3 user credentials on the dispatch console PC. For more information, see the "Configuring Console Site Elements for SNMPv3" procedure in the *SNMPv3* manual.

The Unified Event Manager (UEM) is a fault management application designed to handle the critical fault management functions. To configure secure settings for fault management, see the "Configuring the UEM for SNMPv3" section in the *SNMPv3* manual.

Important:

When you launch the SNMPv3 Common Agent GUI, the account must be a member of the Network Security Administrators group. A local administrator or domain administrator that are not part of the Network Security Administrators group, must launch the GUI from an elevated command prompt.

If you must re-image the dispatch console or re-install the operating system, make a backup copy of the `snmpd.conf` file. When you restore the credentials, simply copy the backed-up file to `C:\ProgramData\Motorola\Motorola Common Agent\persist\snmpd.conf`.

Modifications to secure SNMPv3 credentials do not take effect until the PC is restarted.

Adding a Remote Console to the ASTRO DNS Server

You must add an MCC 7100 IP Dispatch Consoles outside the ASTRO Radio Network Infrastructure (RNI) to the Domain Name Server (DNS). This action involves adding the hostname and IP address of the remote console to the DNS inside the ASTRO RNI.

Note: The IP address on the connecting remote console must be the IP address of the ASTRO RNI and not the IP address of the CEN.

Procedure:

1. In the **Control Panel** of the Windows operating system, navigate to the **Administrative Tools** pane.
2. Double-click **DNS**.
3. In the **DNS Manager** window, on the left pane, expand ***<DNS hostname>*** → **Forward Lookup Zones**.
4. Right-click the location of the Proxy Server, for example `nmd1.zone1` and select **New Host**.
5. In the **Name** field, enter the remote console ASTRO RNI **hostname**.
6. In the **IP address** field, enter the remote console ASTRO RNI **IP address**.

   Note: For example, `z001s001op01.nmd1.zone1`, and `10.1.1.1`. This should correspond to the actual hostname of the remote console combined with the ASTRO RNI suffix configured during the installation or in the Console Dispatch Status, for example `myOP.CENsuffix.nmd1.zone1`.
7. Select the **Create Associated Pointer (PTR) Record** check box.
8. Click **OK**.
9. Click **Done**.

Hardware CRYPTO Configuration

Changing the Default CRYPTR micro Password

The CRYPTR micro officer (administrative) and user passwords are both changed using the CRYPTR micro Management application.

When and where to use: After an installation or upgrade, the passwords will be reset to the default values and must be changed prior to running Elite Dispatch and processing secure calls.

Procedure:

1. Navigate to `C:\Program Files (x86)\Motorola\Motorola CRYPTR micro Support Applications\`.
2. Right-click `CRYPTRmicroManagement.exe` and select **Run As Administrator**.

   Note: Running as Administrator is only required when changing the officer/user passwords and is not required to use other functionality provided by the Management application.
3. From the main screen, choose **Login Admin** to change the Office password, or **Login User** to change the user password.

4 Where prompted, enter the **default** password and click **OK**.
5 Where prompted, enter the **default** password again along with the new password.
6 Click **OK**.

CRYPTR micro Software Upgrade

The CRYPTR micro software can be upgraded during MCC 7100 IP Dispatch Console software installation or upgrade.

In this case, the CRYPTR micro upgrade is silent and does not require user intervention. If the CRYPTR micro device is inserted during the MCC 7100 IP Dispatch Console upgrade, it will be upgraded automatically. If it is inserted post-upgrade, it will be upgraded immediately.

If the CRYPTR micro software needs to be upgraded on its own, not as part of the MCC 7100 IP Dispatch Console upgrade, use the CRYPTR micro Upgrade utility:

1 Open the CRYPTR micro Upgrade application.
2 Select the CRYPTR micro binary image to program into the CRYPTR micro.
3 Initiate programming. If ejection of the CRYPTR micro is required, the utility will prompt you to do so.

The version of CRYPTR micro software can be verified post-upgrade by using CRYPTRmicroManagement utility:

1 Insert the CRYPTR micro into the SD slot.
2 Open the CRYPTR micro Management utility.
3 View the contents of About... box to see the CRYPTR micro version numbers.

Enable / Disable FIPS

In order to support DES-OFB and ADP encryption algorithms, Federal Information Processing Standard (FIPS) compliance must first be disabled in Windows. The console software must be restarted if FIPS is disabled while Elite is running.

To disable FIPS in systems where the console is joined to an ASTRO domain, the “MCC7100 IP Consoles FIPS Disable” GPO must be linked to the “Windows7 MCC7100 IP Consoles” OU. This GPO is not linked by default and must be done manually. This can be done in the ASTRO Domain Controller Group Policy Management Console. See the *Authentication Services* manual for details.

To disable FIPS in systems where the console is joined to a CEN domain (outside the ASTRO RNI), the “MCC7100 IP Consoles FIPS Disable” GPO must be imported into the appropriate OU for the console. See the *Authentication Services* manual for details and consult with the CEN network administrator.

Note: Linking the GPO must be done in the correct order – Disable FIPS GPO must be at the top of the link order (this applies to MCC 7100 IP Dispatch Console on an ASTRO or CEN domain).

The above solution to disable FIPS through a GPO will not work on K-core systems or on MCC 7100 IP Dispatch Console outside the ASTRO RNI (where the OP could be joined to a different domain or no domain at all). Use a local application supplemental configuration template from the supplemental CD to disable FIPS, as follows:

1 Insert the supplemental CD.
2 Open an explorer window and navigate to **\Windows Security Configurations\Scripts\AHT\MCC7100 IP Consoles FIPS Disable**
3 Double click **ApplyAHT.exe**
4 Reboot the PC.

MCC 7100 IP Dispatch Console Maintenance and Troubleshooting

See the following topics for information and procedures that help maintenance the MCC 7100 IP Dispatch Console and resolve any issues that can occur.

Dispatch Console PC Firewall Exceptions

When you run a firewall application on the dispatch console PC, the firewall application may prompt you to allow traffic from certain components of the dispatch console.

Depending on the configuration of the firewall application, you can be prompted for any of the following dispatch console processes:

- `AuxioManager.exe`
- `FileAudioDSP.exe`
- `IRR.exe`
- `ProxyClient.exe`
- `RCSync.exe`
- `RCSyncUser.exe`
- `WinQUICC.exe`

If the firewall application prompts you for any of the processes, allow the traffic so that it does not disrupt the dispatch console operation.

Upgrading the MCC 7100 IP Dispatch Console Software

This process is used to upgrade an existing installation of the MCC 7100 IP Dispatch Console software.

Prerequisites: A previous version of the MCC 7100 IP Dispatch Console software was installed on a Motorola-certified PC. The MCC 7100 Elite and Admin applications have been closed, and all third party software has been closed or stopped.

Warning: For MCC 7100 IP Dispatch Console using a CRYPTR micro for encryption, Secure/Crypto keys and algorithms may be erased during the upgrade. This is dependent upon the type of change to the secure software from version to version. It is recommended to reload this information into the secure card if necessary.

Process:

1 Log on to the Windows 7 operating system as an administrator.

2 Install the MCC 7100 IP Dispatch Console software. See *Installing the MCC 7100 IP Dispatch Console Software on page 47*.

Note: If any issues occur during the upgrade process, manually remove the existing version of the MCC 7100 IP Dispatch Console software. See *Removing All MCC 7100 IP Dispatch Console Applications on page 135* for details. Afterwards, repeat the upgrade process.

3 Install software of associated Windows components. See *Associated Windows Components Software Installation on page 49*.

Failure to Upgrade or Uninstall the MCC 7100 IP Dispatch Console Software

Symptom:

While upgrading or uninstalling the MCC 7100 IP Dispatch Console software, an error message is displayed similar to "`Another app has exclusive access to the file C:\...\Debug.mdb`".

Solution:

Click **Retry**.

Note: If unsuccessful, restart the PC and perform and repeat the upgrade or uninstall procedure.

Elite Console Application Stuck in Application Initializing State

Symptom:

After starting the Elite dispatch console and choosing the Elite configuration file, the **Internal system error occurred** window opens and reads, `See Event Viewer application log for details`. After authenticating with the console user credentials, the Elite dispatch console application fails to assign resources and the *Application Initialization* window opens and reads `The application is initializing, please stand by ...`. The Elite dispatch console application never finishes initializing and remains stuck in the application's initializing state.

The Windows Application Event log error message states to check this troubleshooting procedure in the installation manual.

The *Application Initialization* windows opens after choosing the Elite configuration file, specifying the console user credentials, and completing database synchronization. It is normal for this window to be displayed briefly in a working scenario. However, in this case, the application will never initialize. This error condition may occur after upgrading the MCC 7100 IP Dispatch Console software, applying the Windows Supplemental CD, or restarting Windows.

Solution:

The Windows user account profile must be deleted and recreated. See *Restoring the Windows User Account Profile on page 66* for the required steps.

Note: Elite dispatch console application files are not stored in the user profile folder. However, other program files stored in the user profile folder must be backed up and copied to a different folder, otherwise they will be deleted. When the process is completed, the copied data can be moved back to the user profile folder.

Restoring the Windows User Account Profile

Restoring the Windows user account profile is necessary as a troubleshooting measure when Elite console application is stuck in the initialization state.

Procedure:

1 Close the Elite application

2 Log out of Windows 7.

3 Log into Windows 7 as an administrator (either domain or local admin).

Note: The account must be different than the account used for the Elite dispatch.

4 Delete the profile as follows:

a) In Windows 7, click **Start**, right-click **Computer**, and click **Properties**.

b) Click **Change settings**.

c) Click the **Advanced tab** in the **System Properties** window.

d) Click **Settings** under *User Profiles*.

Step result: The **User Profiles** window opens.

e) Select the relevant profile and click **Delete**.

f) Click **OK**.

5 Log out of Windows 7.

6 Log into Windows 7 with the original account.

Step result: The account profile is recreated and is used by the Elite console.

Elite Console was Denied Access due to an Embedded Password Mismatch

Note: Running Elite as a local Admin or domain Admin on a system with Full (not transparent) Information Assurance (IA) will also result in this error. Elite must be ran from an elevated Command prompt when using local Admin or domain Admin accounts on fully IA secured system.

Symptom:

The Elite application shows the error, `The console was denied access to data due to an embedded password mismatch or internal error. Contact System Administrator.` and does not launch (has cached NM data) or launches based on cached data but still displays the error message.

Solution:

Uninstall and reinstall the MCC 7100 IP Dispatch Console software, as follows:

1 Manually uninstall the MCC 7100 IP Dispatch Console software. See *Removing All MCC 7100 IP Dispatch Console Applications on page 135*.

2 Install the MCC 7100 IP Dispatch Console software. See *Installing the MCC 7100 IP Dispatch Console Software on page 47*.

Elite Console was Denied Access due to an Embedded Password Mismatch after Reinstalling All Software

Symptom:

The Elite application shows the error, `The console was denied access to data due to an embedded password mismatch or internal error. Contact System Administrator.` after the MCC 7100 IP Dispatch Console software is reinstalled.

Solution:

Add a new domain console user to the local **pwvault** group. See *Adding a New Domain Console User on page 67*.

Adding a New Domain Console User

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Administrative Tools** pane.

2 Double-click **Computer Management**.

3 In the left-hand navigation tree, expand **Local Users and Groups → Groups**.

4 Double-click **Power Users**.

5 In the **Power Users Properties** window, click **Add**.

6 In the **Select Users, Computers, Service Account, or Groups** window, click **Advanced**.

7 Click **Find Now**.

8 Select the domain console user. Click **OK**.

9 Click **OK** on all remaining widows.

10 Reboot the computer.

Troubleshooting Audio on MCC 7100 IP Dispatch Console

The MCC 7100 IP Dispatch Console uses on-board peripherals and interfaces to those devices through the Windows audio layer. If the system is experiencing an absence of audio through the peripheral devices, the first step is to verify that the devices are present and enabled in the Windows Sound control panel application.

Audio Quality Issues

Symptom:

A connection to the console proxy is being established, but there are send and receive audio quality issues (choppy or non-existent voice, dropped calls). The MCC 7100 IP Dispatch Console provides a utility to check the current health of the link to the console proxy.

Solution:

Check the link to the console proxy as follows:

1 From the Windows **Start** menu, select **Start → All Programs → Motorola → MCC 7100 Dispatch → Console Status**.
2 The active proxy connection will be displayed along with a three-bar indicator of the link health. If this indicator is fluctuating or consistently display one or zero bars, then contact a system administrator to help diagnose any potential network issues.

Volume Levels Are Too Low

The MCC 7100 IP Dispatch Console contains controls (configurable in Elite Admin) to adjust the speaker volume for the individual speakers mapped through the Peripheral Configuration Tool. Ensure that the speaker volume is set to an appropriate level for the given speakers. See the *MCC 7500 Elite Dispatch User Guide* for details.

No Audio Sent or Received from the Peripherals

The Peripheral Configuration Tool and the Windows Sound applet can both be used to diagnose any potential peripheral issues. For example, a connection is established between a remote console and the console proxy but no audio is heard at the peripherals.

Process:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.
2 Examine the Audio Input and Audio Output tabs.

Note: Verify the name and description of the currently mapped peripherals. The mapped peripherals drop-down list displays the current peripheral type (Speaker1-8, Headset Microphone, etc.)

3 Verify that mappings are present.

Note: The minimum set of peripherals required for dispatch is at least one desktop speaker and one desktop microphone. Verify that one speaker is mapped in the Output tab and one desktop microphone is mapped in the Input tab.

Note: If any of the mapped peripherals display an icon that is grayed out, then that peripheral is disconnected or disabled. Reconnect the device if necessary, or re-enable the device in the Windows Sound panel. See *Disabling/Enabling Audio Devices in Windows on page 58* for details. Upon correcting the problem, the grayed out icon of the device in the Peripheral Configuration Tool should change to a solid icon.

Note: If the mapped speaker devices appear enabled, connected, and mapped then the Peripheral Configuration Tool will allow the user to send a test tone to a selected output device.

4 Select the relevant audio device.

5 Right-click on the row and select the **Test** option.

Step result: A test tone plays through the selected device.

6 If audio is still not heard, then verify the audio levels are not muted, as follows:

a) From the Start menu, enter `Adjust System Volume` and click on the application.

Note: If the system audio is muted, then a speaker icon with a red circle will be displayed. Click on the icon to unmute the audio.

b) If the audio is unmuted and sound is still not heard, then verify and fix the audio levels for each audio device.

c) From the Sound control panel, right-click the relevant audio device and select **Properties**.

d) In the Levels tab, verify that the slider is set to the appropriate volume.

7 Perform additional troubleshooting steps for audio, if necessary:

a) Verify that no console features are enabled that would prevent audio from being played on the speaker (e.g., acoustic cross mute).

b) Verify that Elite Dispatch is correctly configured to route select/unselect audio to that peripheral. The speaker must be mapped in the Peripheral Configuration Tool, connected, and it must be configured in the Elite Dispatch Audio menu.

c) Verify that the MCC 7100 mixer is not muted. All audio devices may appear to be configured correctly but the slider on the 7100 mixer is set to 0.

Troubleshooting Secure Audio on MCC 7100 IP Dispatch Console with CRYPTR micro-Based Encryption

CRYPTR Password Issues

Symptom:

Console Dispatch Status application indicates a problem with CRYPTR micro password. Secure Audio does not work.

Solution:

The following actions could be taken:

1 If the password in the CRYPTR micro is known, but it does not match, update the password in the MCC 7100 IP Dispatch Console. This applies to both User and Admin passwords for the CRYPTR micro.

2 If the password(s) in the CRYPTR micro is the default password, use the CRYPTRmicroManagement utility to change the password. The password in the MCC 7100 IP Dispatch Console will be updated automatically at the same time.

3 If the password(s) in the CRYPTR micro are not known, use the CRYPTRmicroManagement utility to reset the password. Enter an invalid password 15 times in a row, at which point the contents of the CRYPTR micro will be erased and the password will be defaulted.

Note: Any keys previously stored in the CRYPTR micro will be lost.

Testing an Unresponsive CRYPTR micro Card

An unresponsive CRYPTR micro card must be tested to determined whether or not it should be replaced or if the SD Host Controller driver was not installed correctly in the MCC 7100 IP Dispatch Console.

Symptom:

The CRYPTR micro card in the MCC 7100 IP Dispatch Console has become unresponsive. The CRYPTRmicroManagement application does not display the version numbers for the CRYPTR micro software in the **About CRYPTRmicroManagement** window.

Note: The CRYPTR micro card has no visual or audible user interface that can determine its state. Therefore, an additional working CRYPTR micro card is used as part of the troubleshooting process to determine the state of the unresponsive card.

Solution:

The CRYPTR micro card is visually inspected and tested using the MCC 7100 IP Dispatch Console and/or the KVL 4000 to determine if the card is functioning properly.

Note: If a KVL 4000 is used and cannot detect the unresponsive CRYPTR micro card when attempting to perform any action on the CRYPTR micro, the CRYPTR micro card is damaged and must be replaced. See *Recovering a Damaged or Missing CRYPTR micro Card on page 78* for details.

Procedure:

1 Eject the unresponsive CRYPTR micro card from the MCC 7100 IP Dispatch Console.

2 Insert the working CRYPTR micro card into the MCC 7100 IP Dispatch Console.

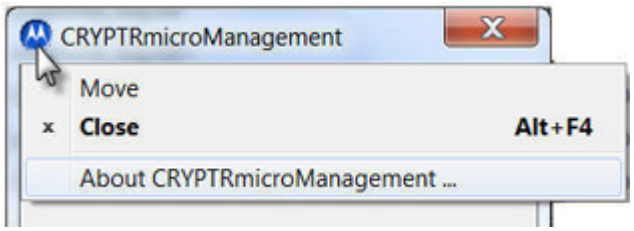
Note: A working CRYPTR micro card is used to determine if the card is defective or if the MCC 7100 IP Dispatch Console was configured properly.

3 Open an explorer window and browse to `C:\Program Files (x86)\Motorola\Motorola CRYPTR micro Support Applications`

4 Double-click the **CRYPTRmicroManagement** application.

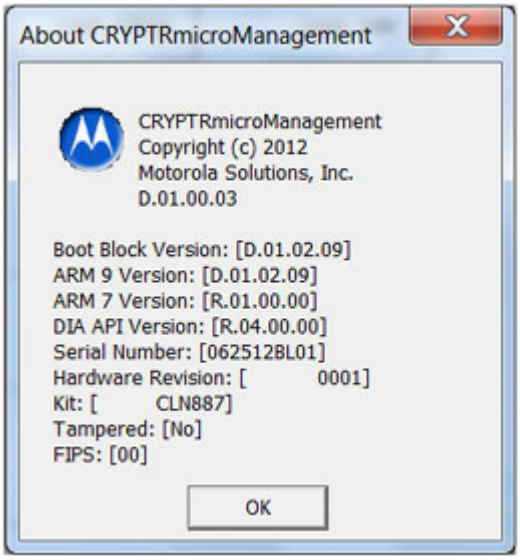
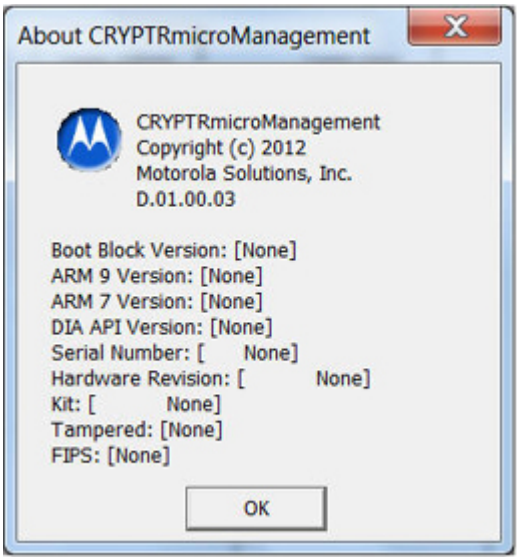
5 Click on the **Motorola symbol** in the upper left-hand corner and select **About CRYPTRmicroManagement**.

Figure 8: CRYPTRmicroManagement – Selecting About CRYPTRmicroManagement



6 From the **About CRYPTRmicroManagement** window, view the version numbers for the CRYPTR micro software to determine the following:

If…	Then…
If the window returns meaningful version numbers,	the unresponsive CRYPTR micro card is damaged and must be replaced with a new one. See *Recovering a Damaged or Missing CRYPTR micro Card on page 78* for details.

If…	Then…
Figure 9: About CRYPTRmicroManagement – Version Numbers 	
If the window becomes unresponsive and then displays "None" for version numbers, **Figure 10: About CRYPTRmicroManagement – None** 	the MCC 7100 IP Dispatch Console may be improperly configured (e.g., does not contain a driver for the CRYPTR micro card). See *SD Host Controller Driver Considerations (CRYPTR Failures) on page 72* to troubleshoot the configuration issue.

Secure Call Failures

The most common secure call failures are defined, along with a possible solution.

Symptom:

CRYPTR micro is in place but secure audio does not work.

Solution:

Verify that CRYPTR micro is keyloaded with the appropriate keys. Use the CRYPRmicroManagement utility to display the list of keys in the CRYPTR Micro.

Symptom:

CRYPTR micro is in place, some keys are loaded, but secure audio does not work.

Solution:

Verify that CRYPTR micro is keyloaded with the appropriate keys. Use the CRYPRmicroManagement utility to display the list of keys in the CRYPTR Micro.

Symptom:

CRYPTR micro is in place, but OTEK does not work.

Solution:

Verify that the OTEK settings for the MCC 7100 IP Dispatch Console are correct. While the MCC 7100 IP Dispatch Console software is running, open the Console Dispatch Status application to the **Encryption/Licensing** tab and check the **OTEK Status**. If it reports OTEK Not Configured, enable OTEK in Network Manager. If the Console Dispatch Status application reports OTEK Not Connected, check with your administrator whether the configured KMF is in service. If the Console Dispatch Status application reports OTEK Connected, and OTEK is still not functional, safely remove the CRYPTR micro and verify with a KVL 4000 that the individual RSI and KMF RSI are programmed as intended.

Symptom:

Software key files are in place, but secure audio does not work.

Solution:

Check Windows Event Log for errors and warnings regarding reading of the software key files during dispatch application start up.

SD Host Controller Driver Considerations (CRYPTR Failures)

Symptom:

Previously working CRYPTR micro card is no longer recognized by the MCC 7100 IP Dispatch Console software and secure calls are no longer working. The Console Dispatch Status application shows “None” even though the CRYPTR micro is inserted into the SD slot.

Solution:

The MCC 7100 IP Dispatch Console package will install and overwrite the SD Host Controller driver currently installed in Windows.

Note: System updates, service packs, and other installation packages may all subsequently overwrite the driver needed by the console. If this occurs, then the console SD card driver must be re-installed.

Procedure:

1 In Windows 7 main menu, right-click **Computer** and select **Properties**.

2 In the **Control Panel** window, click **Device Manager**.

3 Verify that **CRYPTR micro SDIO Device** is found under *Memory Technology Devices*.

Note: If not found, eject the **CRYPTR micro** and insert it again. Then, verify that the **CRYPTR micro SDIO Device** is now found. If still not found, check the Windows Event Log for any errors from the CRYPTR micro driver. Report any errors to Motorola.

4 If no errors, reinstall the CRYPTR micro driver as follows:

a) Log on as an administrator and open a command **DOS** window.

b) Enter

```
"C:\Program Files (x86)\Motorola\Motorola CRYPTR micro Support
Applications\Driver\CRYPTRmicro_install_app.exe" /i "C:\Program Files
(x86)\Motorola\Motorola CRYPTR micro Support Applications\Driver
\CRYPTRmicroDriver.inf" somerandomstring "Soft Console" "Soft Console
Product" "Motorola Solutions"
```

c) Reboot the computer.
d) Eject and reinsert the CRYPTR micro.
e) Look for the **CRYPTR micro SDIO Device** in the Device Manager.

Troubleshooting Detection of CRYPTR micro Device

Use Windows' Device Manager to check whether the CRYPTR micro is detected by the computer. The CRYPTR micro is represented by a node called "**CRYPTR micro SDIO device**" in the Memory Technology Driver Folder in Device Manager.

Note: See Microsoft Windows' help in order to locate and open your Device Manager with administrator privileges.

When the CRYPTR micro is present in the SD slot, the node is present in Device Manager. When the CRYPTR micro is absent from the slot, the node is absent. In some cases, the entire Memory Technology Driver Folder in Device Manager is also absent. Device Manager adds and removes the node upon insertion and removal of the CRYPTR micro. Some examples of abnormal behavior are as follows:

- The CRYPTR micro SDIO Device node remains present in the Memory Technology Folder after the CRYPTR micro is ejected.
- The CRYPTR micro SDIO Device node remains absent from the Memory Technology Folder even though the device is in place.

The following symptoms and solutions for detecting the CRYPTR micro are provided:

Symptom:

The CRYPTR micro is in place but secure audio does not work following a computer reboot. All non secure functionality of the MCC 7100 IP Dispatch Console is still operational. The Console Dispatch Status application reports "`Not Present`". The CRYPRmicroManagement application returns "`None`" for the version information. For all other operations, it returns "`Link Down Error. Crypto module is not present`".

Note: A specific laptop will either always exhibit this behavior or always work properly following a reboot. During testing by Motorola, this issue was observed on HP Elitebook 8440p laptops with Ricoh SD Host Controller. A laptop equipped with a Ricoh SD Host Adapter is more likely to exhibit this issue than other laptops. Technicians can use Device Manager to display the properties of the SD Host Adapter/SD Host Controller. In the **Details** tab, display the Hardware IDs property. If some of the properties contain the string "`VEN_1180`", the computer has a Ricoh SD Host Controller. Laptops equipped with a JMicron or an O2Micro SD Host controller are not likely to exhibit this issue.

Solution:

Eject and reinsert the CRYPTR micro. Use Device Manager to verify that the CRYPTR micro node was not present prior to ejection and reinsertion, but is now present. Restart the MCC 7100 IP Dispatch Console application. The CRYPTR micro should now be detected by the Console Dispatch Status and CRYPTRmicroManagement applications.

Symptom:

The CRYPTR micro is in place but secure audio does not work following an ejection and reinsertion of the CRYPTR micro while MCC 7100 applications are running. All non secure functionality of the MCC 7100 IP Dispatch Console is still operational. The Console Dispatch Status application reports "`Not Present`". The CRYPTRmicroManagement application returns "`None`" for the version information. For all other operations, it returns "`Link Down Error. Crypto module is not present`".

Solution:

Use Device Manager to view the CRYPTR micro node. If present, eject the CRYPTR micro. If the CRYPTR micro node is still present, reboot the computer, insert the CRYPTR micro, and restart the MCC 7100 IP Dispatch Console application. The CRYPTR micro should now be detected by the Console Dispatch Status and CRYPTRmicroManagement applications.

Symptom:

The CRYPTR micro is in place but secure audio does not work. All non secure functionality of the MCC 7100 IP Dispatch Console is still operational. The Console Dispatch Status application reports "`Not Present`". The CRYPTRmicroManagement application returns "`None`" for the version information. For all other operations, it returns "`Link Down Error. Crypto module is not present`".

Solution:

Use Device Manager to view the CRYPTR micro node. If it does not appear despite rebooting the computer or ejecting and reinserting the CRYPTR micro multiple times, reinstall the CRYPTR micro driver as described in *SD Host Controller Driver Considerations (CRYPTR Failures) on page 72*. If the CRYPTR micro node is still not present when it's ejected and reinserted, use Device Manager to display the properties of the SD Host Adapter/SD Host Controller. In the **Details** tab, display the Hardware IDs property. Contact Motorola for further troubleshooting and provide all hardware IDs.

Troubleshooting Connection Issues (Outside the ASTRO RNI)

The state of the connection between the remote MCC 7100 IP Dispatch Console and the PRX 7000 Console Proxy can be checked using the Console Dispatch Status application, as follows:

1 Open the PRX 7000 Console Dispatch Status, see *Console Dispatch Status (PRX 7000 Console Proxy) on page 113*.

2 Once connected, right-click on the IP address of a remote connection in the Remote OP Connection List and select **Link Details**.

Note: If the link state shows zero bars then the connection is not established.

Check the following items if a remote MCC 7100 IP Dispatch Console cannot connect to the PRX 7000 Console Proxy server:

- Verify that a network path exists from the connecting remote MCC 7100 IP Dispatch Console to the control room firewall.
- Verify (if using a VPN connection) that a network path exists from the VPN server to the control room firewall.
- Verify that a proxy connection is configured on the connecting remote MCC 7100 IP Dispatch Console. This can be done from the Status application.
- Verify that the system clocks for the PRX 7000 Console proxy and remote MCC 7100 IP Dispatch Console are time synchronized. Due to security restrictions on the remote link, the clocks must be within 24 hours of each other.
- Check for an affiliated console on the console site.
- Open the Console Dispatch Status application on the PRX 7000 Console Proxy and verify that the connecting remote MCC 7100 IP Dispatch Console is not included on the black list.
- Open the Console Dispatch Status application on the PRX 7000 Console Proxy and check the remote MCC 7100 IP Dispatch Console capacity.
  - Verify that the number of connecting remote MCC 7100 IP Dispatch Consoles does not exceed the licensed capacity and that the licensed capacity is not zero. If the licensed capacity is zero, see *License Troubleshooting – MCC 7100 IP Dispatch Console on page 75* for details.
- Check the power mode settings on the PRX 7000 Console Proxy and remote MCC 7100 IP Dispatch Console.
  - Verify the power mode setting, as described in *Setting Windows Power Options on page 42*, and restart the FLEXlm licensing service, if necessary.

- Using the Console Dispatch Status application on the remote MCC 7100 IP Dispatch Console, verify that the proxy server hostname or IP address is the address configured in the CEN.
- It is possible that network elements between the MCC 7100 IP Dispatch Console and the PRX 7000 Console Proxy do not support standard MTU (Maximum Transmission Unit) or MTU Path Discovery. See *Changing the Maximum Transmission Unit (MTU) on page 76* for details.

License Troubleshooting – MCC 7100 IP Dispatch Console

Symptom:

When you log on to the Elite Dispatch or Elite Admin application, the following error appears: `Operating License could not be found. Please install a valid license before invoking the application.`

To verify the licensed remote OP connection capacity, you can use the Console Dispatch Status application. You can find the licensed capacity in the *Licensing/Encryption* tab in the Console Dispatch Status application. Use the following steps to determine the issue:

- Verify that the licenses are in the correct directory:
  - `C:\ProgramData\Motorola MCC 7100\Licensing`
- Verify that the MAC address obtained during the license generation phase corresponds to an enabled network device. The licensing services will not run if this network device is disabled.
- Verify that the power settings are correctly configured. See *Setting Windows Power Options on page 42* for details.
- If you use a temporary license, open the license file in a text editor and verify that the license has not expired:
  - Look for a similar line in the license file. The expiration date in non-temporary cases is set to `permanent`:

    ```
    + INCREMENT soft_console_capacity motsol 1.0 07-feb-2012 20 \
    ```
- Verify that the FLEXlm License Manager service is running:
  - If the service is not running, start the service.
  - If the service is running, check the task manager and verify that **motsol.exe** is running. If not, restart the service.

Troubleshooting the Instant Recall Recorder License Issues

If you cannot start the Instant Recall Recording application, use the following procedure to determine the issue.

When and where to use: When start the Instant Recall Recorder application, the following error appears: `Operating License could not be found. Please install a valid license before invoking.`

Procedure:

- Verify that the license is in the following directory: `C:\ProgramData\Motorola MCC 7100\Licensing`
- Verify that the MAC address that you obtained during the license generation is the address of an enabled network device.

  If this network device is disabled, the licensing services do not run.
- Verify that the Windows power settings are correct. See *Setting Windows Power Options on page 42*
- If you use a temporary license, open the license file in a text editor and verify that the license did not expire by looking for a similar line:

  ```
  ? INCREMENT software_irr motsol 1.0 07-feb-2012 1 \
  ```

  The expiration date in non-temporary cases is set to `permanent`.
- Verify that the FLEXlm License Manager service is up and running:
  - If the service is not running, start the service.

- If the service is running but the `motsol.exe` executable is not running in the Task Manager, restart the service.

Changing the Maximum Transmission Unit (MTU)

In the event that intermediate network elements (routers, switches) drop packets greater than 1500 bytes, it may be necessary to change the value of the MTU on the PRX 7000 Console Proxy or the MCC 7100 IP Dispatch Console to be a lower value.

Warning: The MTU should only be modified as a last resort and after the all network settings have been check and verified.

Procedure:

1 In Windows 7, select **Start** and enter `regedit` in the search field.

2 In the registry editor, navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\interface-name`.

3 Right-click **MTU** of type REG_DWORD and select **Modify**.

4 Enter the desired MTU size in hexadecimal.

Note: The range of the MTU is 0x44 to the dynamically determined MTU (in bytes). Set this value to 0xFFFFFFFF, to change the MTU back to the default value of the network interface's dynamically determined MTU.

5 Click **OK**.

6 Close the Registry Editor.

7 Restart the computer.

MCC 7100 IP Dispatch Console Disaster Recovery

This section provides details and references to help recover the MCC 7100 IP Dispatch Console in the event of a failure.

Recovering an MCC 7100 IP Dispatch Console Installation

The recovery of an MCC 7100 IP Dispatch Console installation during a disaster recovery event requires a full installation.

When and where to use: Disaster recovery is used in the event that the current installation of the MCC 7100 IP Dispatch Console has become unstable or inoperable. Follow this process in this section to reinstall all necessary components.

Process:

1 Backup critical files used by the MCC 7100 IP Dispatch Console. See *Critical Backup Files for the MCC 7100 IP Dispatch Console on page 77* for a list of files.

2 Install the recommended Windows 7 operating system, if not previously installed and configured.

a) Run the Motorola Operating System Installer (MOSI). See *Windows Installation and Motorola OS Installer (MOSI) on page 41*.

b) Configure Windows Components. See *Configuring Windows Components on page 41*.

3 Install the MCC 7100 IP Dispatch Console software. See *Installing the MCC 7100 IP Dispatch Console Software on page 47*.

4 Install all associated Windows 7 components. See *Associated Windows Components Software Installation on page 49* for all required installation and configuration procedures.

5 Restore critical files backed up in step 1.

6 **Only for dispatch consoles inside the ASTRO Radio Network Infrastructure (RNI):** Rediscover the MCC 7100 IP Dispatch Console in the Unified Event Manager:

a) Delete the MCC 7100 IP Dispatch Console from the Unified Event Manager. See the "Deleting Devices" procedure in the *Unified Event Manager* manual.

b) Discover the MCC 7100 IP Dispatch Console in the Unified Event Manager. See the "Discovering Devices" procedure in the *Unified Event Manager* manual.

Critical Backup Files for the MCC 7100 IP Dispatch Console

The archiving of critical files is essential to the operation of the MCC 7100 IP Dispatch Console. You must perform it periodically. Archive the files to an external device, for example, external storage or network storage.

Table 11: MCC 7100 IP Dispatch Console Files to Backup

File Type	Location	Note
License files	`C:\ProgramData\Motorola MCC 7100\Licenses`	Back up the license files to speed up the recovery process.
Proxy Connection List	`C:\ProgramData\Motorola MCC 7100\ProxyClient \clientOptions.txt`	The Proxy Connection List is a single file. **Note:** The Proxy Connection List file is available for dispatch consoles outside the ASTRO Radio Network Infrastructure (RNI).
Peripheral Configuration files	`C:\ProgramData\Motorola MCC 7100\PeripheralConfig`	Back up all the `.xml` files.
Network hosts file	`C:\Windows\System32\drivers\etc \hosts`	These files are only used for configurations that are outside the ASTRO RNI or in K-core systems.
SNMPv3 file	`C:\ProgramData\Motorola \Motorola Common Agent\persist \snmpd.conf`	The SNMPv3 file is a single file.
Elite configuration files	`C:\Users\Public\Documents \Motorola MCC 7100\config`	Back up all the `.elt` files.
Secure Configuration files	`C:\ProgramData\Motorola\PWVault \Data`	Back up the `CRYPTO.context` file and the `CRYPTO.data` file. To backup the secure configuration data, log on as an administrator, open a command prompt and execute the following command: `C:\Program Files (x86)\Motorola`

Table continued…

File Type	Location	Note
		`\PWVault\pwvadmin.exe export -app APP_GROUP_CRYPTO -quiet -fpath` ***<PATH>*** where `PATH` is the directory and filename where the backed up data are to be placed.
Secure Software Key files	If you use software key storage mode, locate and back up your key files.	To open the keystorage directory in which the keyfiles are to be stored, in the Console Dispatch Status application, select the **Encryption/ Licensing** tab, and click **Key Store**. **Note:** You must perform these actions only when you uninstall the dispatch console. Keyfiles are preserved during an upgrade.

Recovering a Damaged or Missing CRYPTR micro Card

Troubleshooting procedures have indicated that the CRYPTR micro card must be replaced and reconfigured.

Prerequisites: Before performing this process, see *Testing an Unresponsive CRYPTR micro Card on page 70* to ensure that the CRYPTR micro card was tested and determined to be defective.

Process:

1 Insert the replacement CRYPTR micro card into the MCC 7100 IP Dispatch Console and launch the CRYPTRmicroManagement application. Using the About **CRYPTRmicroManagement** window, view the version numbers for the CRYPTR micro software, see *Testing an Unresponsive CRYPTR micro Card on page 70* for details. Verify that these version numbers are up-to-date.

2 If the version numbers are not up-to-date, the CRYPTR micro card needs to be updated.

Note: The up-to-date versions of the CRYPTR micro software image are located at `C:\Program Files (x86)\Motorola\Motorola CRYPTR micro Support Applications\Driver\red_cryptr_upgrade.prod.bin`

a) Open an explorer window and browse to `C:\Program Files (x86)\Motorola\Motorola CRYPTR micro Support Applications`

b) Double-click the **CRYPTRmicroUpgrade** application.

c) Browse to `C:\Program Files (x86)\Motorola\Motorola CRYPTR micro Support Applications\Driver\red_cryptr_upgrade.prod.bin`

Note: The CRYPTRmicroUpgrade application will guide you through the upgrading process for the CRYPTR micro card, including ejecting and reinserting the CRYPTR micro card.

3 Use the CRYPTRmicroManagement application to change Admin and User passwords on the CRYPTR micro card. See *Changing the Default CRYPTR micro Password on page 63* for details.

4 Reload key management parameters and encryption keys. If using manual key management, use a KVL 4000 to program encryption keys into the CRYPTR micro card. If using centralized key management, use a KVL 4000 to load the Individual RSI, KMF RSI, and MNP, if not using defaults. Then, perform a Store and Forward procedure. See *Load Secure Keys and Algorithms on page 49* for details.

Chapter 3

PRX 7000 Console Proxy – Setup and Installation

This chapter provides information and activities associated with the setup and installation of the PRX 7000 Console Proxy. This chapter also includes setup verification information and activities, maintenance and troubleshooting and field replacement unit information as well as disaster recovery information to support the PRX 7000 Console Proxy.

PRX 7000 Console Proxy Software and Hardware Requirements

The PRX 7000 Console Proxy requires a Windows-based PC or workstation running a 64-bit version of Windows 7 Professional. The server must also conform to the minimum supported hardware specifications of an MCC 7500 Console when running in a cohab environment. See the *MCC 7500 Dispatch Console with Voice Processor Module* manual for details.

Note: The HP Z420 is the recommended workstation to use for the PRX 7000 Console Proxy. See *Table 8: Hardware Specifications – HP Z420 Workstation on page 37* for details.

PRX 7000 Console Proxy Cohab with MCC 7500 Installations

The PRX 7000 Console Proxy can be installed as a standalone product or cohabited with an MCC 7500 Dispatch Console (VPM-based) installation inside the ASTRO RNI. Either or both can be installed with no impact to performance. See the *MCC 7500 Dispatch Console with Voice Processor Module* manual for MCC 7500 Dispatch Console installation procedures.

Warning: The PRX 7000 Console Proxy installation will not allow the console proxy to be installed cohabited with an MCC 7100 IP Dispatch Console installation (or vice versa).

Setting Up the PRX 7000 Console Proxy

This process provides the order in which the components associated with the PRX 7000 Console Proxy must be installed and/or configured.

Process:

1 Install the recommended Windows 7 operating system, as follows:
   a) Run the Motorola OS Installer (MOSI). See *Windows Installation and Motorola OS Installer (MOSI) on page 82*.
   b) Configure the PC's power settings. See *Setting Windows Power Options on page 82*.
2 Generate Flexera License files. See *Generating License Certificates for the PRX 7000 Console Proxy on page 83*.

3 Install PRX 7000 Console Proxy software. See *Installing the PRX 7000 Console Proxy Software on page 84*.
4 Configure black list of remote MCC 7100 IP Dispatch Console. See *Adding a Remote MCC 7100 IP Dispatch Console to the Black List on page 115*.
5 Install MOTOPATCH. See *MOTOPATCH Installation on page 85*.
6 Install Supplemental CD. See *Windows Supplemental Configuration (K-Core) on page 85*.
7 Configure Network Interface Card (NIC) on PC or server inside the ASTRO RNI. See *Configuring the PC Network Interface Card for the PRX 7000 Console Proxy on page 86*.
8 Setup the Domain for the console site. See *Setting Up the Domain for the PRX 7000 Console Proxy on L and M Core on page 87*.

Operating System Installation for the PRX 7000 Console Proxy

The current Windows operating system must be updated with Windows 7 Professional with an approved service pack before installing the PRX 7000 Console Proxy software.

Windows Installation and Motorola OS Installer (MOSI)

Before you install the MCC 7100 IP Dispatch Console software, you must update the Windows 7 operating system with an approved service pack.

The installation of a fresh Windows 7 Professional operating system with an approved service pack is required to ensure proper operation. Motorola provides two different installations depending on the computer hardware.

- MOSI 64-bit installation DVD for Motorola purchased workstations (i.e., HP Z420).
- Windows 7 Professional OEM DVD for customer laptop installations.

Note: For Windows 7 OEM installations, customers are responsible for installing all required drivers.

Note: The following restrictions must be followed when naming a laptop during the installation of the Windows 7 operating system:

- Minimum length: 2
- Maximum length: 48
- Allowed numbers: [0–9]
- English letters: [a-zA-Z]
- Special characters: . –
- No leading and trailing spaces

Note: Workstations purchased from Motorola are imaged with the correct Windows 7 operating system and approved service pack. All required drivers are configured and installed. The MOSI installation and configuration (local or over-the-network) minimizes the wait time normally experienced during OS installations. The MOSI media is updated periodically to provide continual support for installations on Motorola purchased workstations. Information on using MOSI is available on the Motorola Online (MOL) web portal. See the MOSI media label or readme.txt for information regarding access to Motorola Online (MOL).

Setting Windows Power Options

The power options for Windows 7 must be set correctly to ensure uninterrupted operation. See the Windows 7 documentation or the PC manufacturers documentation for information regarding the steps for setting power options.

The steps described in this procedure may not reflect recent updates to the operating system. For installations on HP laptop/workstation, disable the “HP Power Assistant Service”. See the relevant HP documentation for details.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Power Options** pane.
2 For the **Balanced (recommended)** plan, click **Change plan settings**.
3 Click **Change advanced power settings**.

Step result: The **Power Options** window appears.

4 Expand **Hard disk → Turn off hard disk after** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

5 Expand **Sleep → Sleep after** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

6 Expand **Sleep → Allow hybrid sleep** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Off**.
- If you use a desktop computer, from the **Setting** list, select **Off**.

7 Expand **Sleep → Hibernate after** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

8 Expand **Sleep → Allow wake timer** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Disable**.
- If you use a desktop computer, from the **Setting** list, select **Disable**.

9 Expand **USB settings → USB selective suspend setting** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Disabled**.
- If you use a desktop computer, from the **Setting** list, select **Disabled**.

10 Expand **Display → Turn off display after** and perform one of the following actions:

- If you use a laptop, from the **On battery** and **Plugged in** lists, select **Never**.
- If you use a desktop computer, from the **Setting** list, select **Never**.

11 Click **OK**.
12 Close the **Control Panel** window.

Generating License Certificates for the PRX 7000 Console Proxy

This procedure is used to obtain a license certificate from the FlexNet Operations Portal before installing the PRX 7000 Console Proxy software.

Note: Before obtaining a license certification, an Entitlement ID is required to access the server. The entitlement ID is emailed to the customer by Motorola and contains instructions on how to acquire license files.

Process:

1 The customer places the software order, including the number of licenses required.
2 An order fulfillment email, containing an Entitlement ID and instructions, is sent to the customer.
3 The customer logs onto `http://licensing.motorolasolutions.com`

.

Note: The Entitlement ID is used to initially create a user account, if one does not exist. An automated email, containing a default password, is sent to the registered email address.

4 Once logged on, the customer manages, selects, and activates all relevant entitlements.

Note: The FlexNet Operations Portal guides the user through the fulfillment process.

5 The customer then configures the server host by either selecting an existing host or adding a new host.

Note: When asked to configure a server host, enter the Ethernet MAC address for the target PC without dashes. The list of MAC addresses along with their associated network adapters can be found by running a Windows command prompt and entering `ipconfig /all` from the target PC.

Important: It is highly recommended that the MAC address selected in this step be the address associated with a permanent network adapter on the server. The licensing services could be adversely affected by choosing a network adapter that is frequently enabled or disabled.

6 The customer enters 1 for the fulfillment count.

Note: The license for the PRX 7000 Console Proxy can have a maximum of 10 remote connections.

7 After reviewing the license information, the customer generates the license file and completes the process.

8 Next, the customer manages the license and either saves the license file to the PC or emails the license.

Note: This is the license file that is used when prompt during the installation of the PRX 7000 Console Proxy software installation.

Installing the PRX 7000 Console Proxy Software

Use the following procedure to install the PRX 7000 Console Proxy software on a computer approved by Motorola.

By performing the following procedure, you install the PRX 7000 Console Proxy software and the following setup programs:

OpenSSL
A toolkit implementing the Secure Sockets Layer, Transport Layer Security, and general purpose cryptography library.

Certificate Generation and Deployment (CGD)
A tool that creates and distributes Motorola default certificates for target windows devices to authenticate with the installed Trusted Root Certificate.

DirectX
Collection of application programming interfaces (APIs).

.NET Framework
Runtime and associated files required to run applications developed to target the .NET Framework.

7-Zip
File archiving utility with a high compression ratio.

Password Vault
Secured password manager for storing passwords.

Prerequisites: Ensure that the PC or workstation on which you want to install the PRX 7000 Console Proxy is running Windows 7 Professional.

Procedure:

1 Insert the PRX 7000 installation media into the CD/DVD drive.

2 Open the PRX 7000 installation media and double-click `Setup.exe`.

3 From the welcome page of the Motorola PRX 7000 setup wizard, click **Next**.
4 On the next page, perform one of the following actions:
   - If you install the PRX 7000 software for the first time and you did not import the licenses before, browse to the folder that contains the generated FLEXnet license files.
   - If you installed the PRX 7000 software or imported the licenses to the predetermined location used by the Flexera before, click **Install**.
5 Confirm that you agree to install the software and reboot the computer by clicking **Yes** in the confirmation window.
6 Verify the installation of the PRX 7000 services, as follows:
   a) From the Windows **Start** menu, select **All Programs → Motorola → PRXY 7000 → Console Status**.
   b) Verify the value for the licensed capacity in the **Remote OP Connection List** window.

Configure a Black List for Remote MCC 7100 IP Dispatch Consoles (Optional)

The black list is meant to block specific remote MCC 7100 IP Dispatch Consoles from connecting to the PRX 7000 Console Proxy inside the ASTRO RNI. Any remote dispatch console that is inadvertently added to the black list will be prevented from establishing a connection. See *Adding a Remote MCC 7100 IP Dispatch Console to the Black List on page 115* for details.

MOTOPATCH Installation

Ensure that the correct Windows 7 Professional operating system service pack is installed before inserting and opening the *MOTOPATCH for Windows* DVD. See the instruction in the `README.txt` file included in the the *MOTOPATCH for Windows* DVD.

Windows Supplemental Configuration (K-Core)

The ASTRO® 25 Windows Supplemental CD is used to install specific Windows Supplemental CD files using a Windows Install Framework script.

Important: The Windows supplemental installations must be reinstalled when upgrading/installing console proxy software, when the supplemental CD changes, or when reinstalling the operating system.

The following software and operational installations are performed using the Windows Supplemental CD:

- PuTTY
- Group Policy Objects - scripts related to Active Directory and DNS, including script for Windows devices to join the domain.

Note: See the *Windows Supplemental Configuration* manual for installation procedures. The installation of programs such as OpenSSL and CGD are performed as part of the PRX 7000 Console Proxy installation. See *Installing the PRX 7000 Console Proxy Software on page 84* for details.

Network Interface Card (NIC) Configuration

The configuration of the network interface card on the PC must be modified to support the console proxy.

Note: The IP address of the console PC directly affects SNMPv3 functionality. Modifying the IP address of the console PC for any reason after its initial setting may require SNMPv3 user credentials on the PC be reset. See the *SNMPv3* manual for details.

Configuring the PC Network Interface Card for the PRX 7000 Console Proxy

The Network Interface Card (NIC) enables communication from the console proxy to an MCC 7100 IP Dispatch Console inside the ASTRO RNI or to remote MCC 7100 IP Dispatch Console outside the ASTRO RNI through a control room firewall. The configuration of the NIC is only required for new installations and as part of the disaster recovery process.

Note: The steps provided in this procedure are intended as a guide and may not reflect recent updates to the Microsoft Windows 7 operating system. See the relevant Microsoft operating system documentation or the computer manufacturer's documentation for specific help on how to configure the network interface card.

Prerequisites: Acquire the following DNS network settings:

- List of DNS server IP addresses
- List of DNS suffixes

Note: See the system configuration documentation (provided by Motorola) for the correct network settings and relevant lists of DNS server IP addresses and DNS suffixes, otherwise contact Motorola Solution Support Center (SSC) for further assistance.

When and where to use: Configure the Network Interface Card (NIC) on the PC or server running the console proxy software inside the ASTRO RNI.

Note: In Windows 7, the Local Area Connection icon in Managed Network Connections may indicate that the network connection is partially available (yellow triangle with an exclamation mark) even though there is network connectivity to the ASTRO Radio Network Infrastructure (RNI). This icon may indicate partial availability when there is no connection from the ASTRO RNI to the external internet, which is a typical system configuration.

Procedure:

1 Log on to the Windows 7 as an administrator.
2 In the Control Panel, navigate to the **Network and Sharing Center** pane.
3 From the left-hand menu, select **Change adapter settings**.
4 If the Local Area Connection is disabled, right-click the **Local Area Connection**. Select **Enable**.
5 Right-click **Local Area Connection** and select **Properties**.

Step result: The **Local Area Connection Properties** window opens.

6 Click **Configure** under *Connect using*.

Step result: The **Network Connection Properties** window for the specific card opens.

7 Click the **Advanced** tab.
8 Select **Link Speed & Duplex** from *Property:*.
9 Select **100Mbps/Full Duplex** from the *Value* drop-down list and click **OK**.

Note: For Motorola purchased PCs (i.e., HP Z420), select **100 Mb Full**.

10 Right-click **Local Area Connection** and select **Properties**.

11 Double-click **Internet Protocol (TCP/IPv4)** and set the following values:

a) Select **Use the Following IP address:** in the General tab.
b) Enter the **IP address**, **Subnet mask** and **Default gateway** provided for this network interface card.
c) Select **Use the following DNS server addresses:** if not selected.
d) Click **Advanced** to open the **Advanced TCP/IP Settings** window.
e) Select the **DNS** tab.
f) Click **Add...**, enter the **DNS server address** in the **TCP/IP DNS Server** window, and click **Add** the save the address.

Note: Repeat this step for each DNS server in the order of use.

g) Select **Append these DNS suffixes (in order):**.
h) Click **Add...** under the list of DNS suffixes, enter the **Domain suffix** in the **TCP/IP Domain Suffix** window, and click **Add** to save the suffix.
i) Verify that **Register this connection's addresses in DNS** is checked.
j) Select the **WINS** tab and verify that the **Enable LMHOSTS lookup** check box is NOT selected.
k) Click **OK** on all subsequent windows to save all IP settings.
l) Click on **No** when prompt to reboot.

Setting Up the Domain for the PRX 7000 Console Proxy on L and M Core

Prerequisites: Configure the DNS server IP addresses and DNS suffixes. See *Configuring the PC Network Interface Card for the PRX 7000 Console Proxy on page 86*.

Note: A domain administrator account and password associated with this domain account are required to join the Active Directory domain. For additional domain authentication information, see the *Authentication Services* manual.

Important: It is highly recommend that the user apply a secure password to the Administrator account at this time. Failure to do so may result in a security breach. Follow standard Microsoft procedures to change the password on this account.

When and where to use: Perform this procedure on the server running the console proxy software inside the ASTRO Radio network Infrastructure (RNI).

Procedure:

1 In the Windows operating system, navigate to the PRX 7000 bin directory:

- On a 32 bit OS: ***<systemdrive>***`\Program Files (x86)\Motorola\AAA\bin`
- On a 64 bit OS: ***<systemdrive>***`\Program Files\Motorola\AAA\bin`

2 Double-click **JoinADomain.exe**.

Note: If the Active Domain (AD) cannot be found, manually enter the domain name.

3 If the **User Account Control** window appears, click **Yes**.

4 In the **Join Active Directory Domain** window, enter the ***<user name>*** and ***<password>*** for the domain account used to join the Windows-based device to the active directory domain.

Step result: The Organization Unit (OU) selection gets updated.

5 From the **Organization Unit (OU)** drop-down list, select the correct organization unit.

6 Click **Join**.

Note: Once the computer has joined the domain, the local administrator account (not the domain account) is renamed to `MotoSec`.

7 Log on to the Windows operating system with a domain account and perform a group policy update:

a) In the **Start** menu search box, enter `cmd`.
b) From the list of results, right-click **cmd** and select **Run as administrator**.
c) When prompted in the **User Account Control** window, select **Yes**.
d) In the command prompt window, enter `gpupdate /force` and wait for the operation to complete.
e) Close the command prompt window.
f) Reboot the computer.

PRX 7000 Console Proxy Maintenance and Troubleshooting

Upgrading the PRX 7000 Console Proxy Software

This process is used to upgrade an existing installation of the PRX 7000 Console Proxy software.

Process:

1 Log on to the Windows 7 as an administrator.
2 Install the PRX 7000 Console Proxy software. See *Installing the PRX 7000 Console Proxy Software on page 84*.

Note: If any issues occur during the upgrade process, manually remove the existing version of the PRX 7000 Console Proxy software. See *Uninstalling the PRX 7000 Console Proxy Software on page 88* for details. Afterwards, repeat the upgrade process.

Uninstalling the PRX 7000 Console Proxy Software

This procedure is used to uninstall a previous installation of the PRX 7000 Console Proxy software that was not installed incorrectly.

Prerequisites: The proxy server software must be removed from the computer using the built-in functionality of the operating system, e.g., Using *Programs and Features* under *Control Panel* and selecting **Motorola Solutions PRX 7000 Server**.

Note: Executing the PRX 7000 Uninstall will ONLY remove the PRX 7000 application package. Other 3rd party packages installed by the master installer such as the Password Vault, 7zip, OpenSSL, .NET runtimes, and CGD are not automatically removed and would need to be uninstalled manually to remove them from the system.

Procedure:

1 Log on to the Windows 7 as an administrator.
2 In the **Control Panel** of the Windows operating system, navigate to the **Programs and Features** pane.
3 Select **Motorola Solutions PRX 7000 Server**.
4 Click **Uninstall**.

Note: During the uninstall process, the following error can appear: `ERROR 1306: Another app has exclusive access to the file C:\...\Debug.mdb. Please shutdown all other apps and retry.` If the error appears, wait one minute and click **Retry**.

5 Reboot the computer.

Remote Console Cannot Connect to the Proxy Server

The state of the connection between the remote MCC 7100 IP Dispatch Console and the PRX 7000 Console Proxy can be checked using the Console Dispatch Status application, as follows:

1 Open the PRX 7000 Console Dispatch Status, see *Console Dispatch Status (PRX 7000 Console Proxy) on page 113*.

2 Once connected, right-click on the IP address of a remote connection in the Remote OP Connection List and select **Link Details**.

Note: If the link state shows zero bars then the connection is not established.

Check the following items if a remote MCC 7100 IP Dispatch Console cannot connect to the PRX 7000 Console Proxy server: test

- Verify that a network path exists from the connecting remote MCC 7100 IP Dispatch Console to the control room firewall.
- Verify (if using a VPN connection) that a network path exists from the VPN server to the control room firewall.
- Verify that a proxy connection is configured on the connecting remote MCC 7100 IP Dispatch Console. This can be done from the Status application.
- Verify that the system clocks for the PRX 7000 Console proxy and remote MCC 7100 IP Dispatch Console are time synchronized. Due to security restrictions on the remote link, the clocks must be within 24 hours of each other.
- Check for an affiliated console on the console site.
- Open the Console Dispatch Status application on the PRX 7000 Console Proxy and verify that the connecting remote MCC 7100 IP Dispatch Console is not included on the black list.
- Open the Console Dispatch Status application on the PRX 7000 Console Proxy and check the remote MCC 7100 IP Dispatch Console capacity.
  - Verify that the number of connecting remote MCC 7100 IP Dispatch Consoles does not exceed the licensed capacity and that the licensed capacity is not zero. If the licensed capacity is zero, see *License Troubleshooting – MCC 7100 IP Dispatch Console on page 75* for details.
- Check the power mode settings on the PRX 7000 Console Proxy and remote MCC 7100 IP Dispatch Console.
  - Verify the power mode setting, as described in *Setting Windows Power Options on page 82*, and restart the FLEXlm licensing service, if necessary.
- Using the Console Dispatch Status application on the remote MCC 7100 IP Dispatch Console, verify that the proxy server hostname or IP address is the address configured in the CEN.
- It is possible that network elements between the MCC 7100 IP Dispatch Console and the PRX 7000 Console Proxy do not support standard MTU (Maximum Transmission Unit) or MTU Path Discovery. See *Changing the Maximum Transmission Unit (MTU) on page 90* for details.

License Troubleshooting – PRX 7000 Console Proxy

The Status application can be used to verify the licensed remote OP connection capacity. The licensed capacity can be found in the **Remote OP Connection List** tab underneath the list of remote connections. See *Remote OP Connection List on page 114* for details. If the capacity is zero, an issue may exist in the license configuration. Use the following to determine the issue:

- Verify that the licenses are in the correct directory, as follows:
  - `C:\ProgramData\Motorola Dispatch\Licenses`
- Verify that the MAC address obtained during the license generation phase corresponds to an enabled network device. The licensing services will not run if this network device is disabled.
- Verify that the power settings are correctly configured. See *Setting Windows Power Options on page 82* for details.
- If using a temporary license, open the license file in a text editor and verify that the license has not expired:

- Look for a similar line in the license file. The expiration date in non-temporary cases is set to `permanent`:

  ```
  + INCREMENT console_proxy_conn motsol 1.0 07-feb-2012 10 \
  ```

- Verify that the FLEXlm License Manager service is running, as follows:
  - If the service is not running, start the service.
  - If the service is running, check the task manager and verify that **motsol.exe** is running. If not, restart the service.

Changing the Maximum Transmission Unit (MTU)

In the event that intermediate network elements (routers, switches) drop packets greater than 1500 bytes, it may be necessary to change the value of the MTU on the PRX 7000 Console Proxy or the MCC 7100 IP Dispatch Console to be a lower value.

Warning: The MTU should only be modified as a last resort and after the all network settings have been check and verified.

Procedure:

1. In Windows 7, select **Start** and enter `regedit` in the search field.
2. In the registry editor, navigate to `HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\interface-name`.
3. Right-click **MTU** of type REG_DWORD and select **Modify**.
4. Enter the desired MTU size in hexadecimal.

   Note: The range of the MTU is 0x44 to the dynamically determined MTU (in bytes). Set this value to 0xFFFFFFFF, to change the MTU back to the default value of the network interface's dynamically determined MTU.
5. Click **OK**.
6. Close the Registry Editor.
7. Restart the computer.

PRX 7000 Console Proxy Disaster Recovery

This section provides details and references to help recover the PRX 7000 Console Proxy in the event of a failure.

Recovering a PRX 7000 Console Proxy Installation

The recovery of a PRX 7000 Console Proxy during a disaster recovery event requires a full installation.

When and where to use: Disaster recovery is used in the event that the current installation of the PRX 7000 Console Proxy has become unstable or inoperable. Follow this process in this section to reinstall all necessary components.

Process:

1. Backup critical files used by the PRX 7000 Console Proxy. See*Critical Backup Files for the PRX 7000 Console Proxy on page 91* for a list of files.
2. If necessary, install the Window operating system. See *Operating System Installation for the PRX 7000 Console Proxy on page 82*.
3. Install the PRX 7000 Console Proxy software. See *Installing the PRX 7000 Console Proxy Software on page 84*.
4. Install MOTOPATCH. See *MOTOPATCH Installation on page 55*.
5. If necessary, configure the NIC. See *Network Interface Card (NIC) Configuration on page 56*.

6 If necessary, set up the Active Directory Domain. See *Setting Up the Domain for the PRX 7000 Console Proxy on L and M Core on page 87*.

7 Restore critical files backed up in step 1.

Critical Backup Files for the PRX 7000 Console Proxy

The archiving of critical files is essential to the operation of the PRX 7000 Console Proxy. You must perform it periodically. Archive the files to an external device, for example, external storage or network storage.

Table 12: PRX 7000 Console Proxy Files to Backup

File Type	Location	Note
License files	`C:\ProgramData\Motorola Dispatch\Licenses`	Back up the license files to speed up the recovery process.
Proxy Black List	`C:\ProgramData\Motorola PRX 7000\ProxyServer\blacklist.txt`	The Proxy Black List is a single file.

Chapter 4

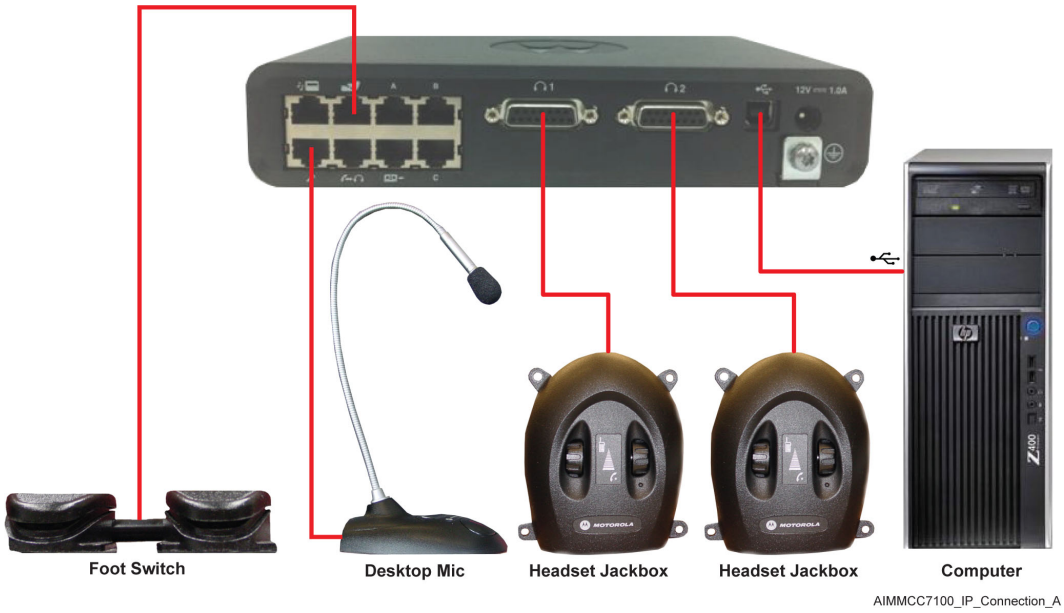
USB Audio Interface Module

The USB Audio Interface Module (USB AIM) is an external device that you connect to the MCC 7100 IP Dispatch Console. It functions as an interface between analog devices and the console position and as a general-purpose input/output module.

The USB Audio Interface Module supports audio routing between the dispatch operator and peripherals. The dispatch operator uses Motorola-standard peripherals that connect to the USB Audio Interface Module device. The USB AIM connects to the MCC 7100 IP Dispatch Console with a USB cable.

The instant recall recorder (IRR) software installed at the console position computer supports short-term audio logging so there is no need to support an external IRR port on the USB AIM device. The dispatch operator can replay the recorded audio directly from the hard drive of the console position computer.

Figure 11: USB Audio Interface Module – Audio Routing

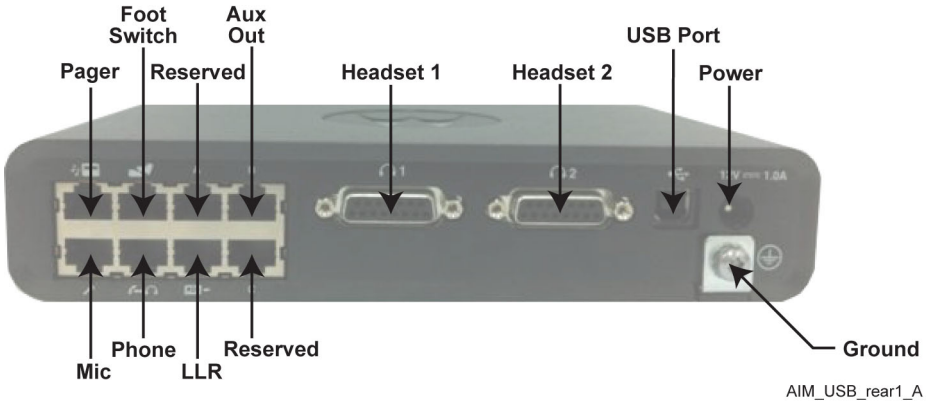


USB Audio Interface Module Connections

The USB Audio Interface Module supports all the Motorola-standard peripherals except for the desktop speakers. Instead of the Motorola-standard speakers, you use common off-the-shelf USB speakers that you connect directly to the console operator position computer. In addition to the ports for standard peripherals and external devices, the USB

AIM supports four generic local auxiliary outputs. They activate warning lights that inform about the operations performed by the dispatch operator.

Figure 12: USB Audio Interface Module Port Connections



The USB port is used to connect the USB AIM device to the MCC 7100 IP Dispatch Console. Other ports are used to connect peripherals.

Note: Do not connect the USB Audio Interface Module to the telephone network directly.

Table 13: USB Audio Interface Module Peripherals

Port Type	Peripheral Type
Two DB15 connectors	Two headset jacks
Eight RJ45 connectors	One desk microphone One footswitch One external paging encoder One telephone/headset port One local logging recorder One auxiliary output port for four generic auxiliary output channels

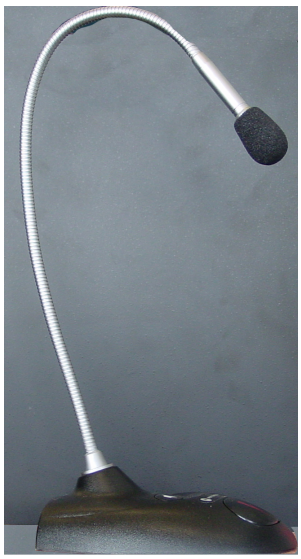
Peripherals Supported with USB Audio Interface Module

The USB Audio Interface Module supports most of the Motorola-standard peripherals. Read the following topics to learn more about the Motorola-standard peripherals that you can connect to the USB Audio Interface Module device and about the USB Audio Interface Module ports.

Desk Microphone

The USB Audio Interface Module is capable of supporting a desktop microphone. The desktop microphone contains a transmit button and a monitor button in the base for use with the selected radio channel or channels. For each dispatch console, you can use one desktop microphone.

Figure 13: Gooseneck Microphone



MCC7500_microphone

The desk microphone can be attached to a horizontal surface or left freestanding so that the dispatcher can pick it up. The 18-inch long, flexible shaft makes it possible for the dispatcher to position the microphone head within a few inches of their mouth even when the base is placed behind a keyboard or writing area.

If a desk microphone is connected to a dispatch console while no headsets are connected, the desk microphone is active whenever any transmit function is active.

Each MCC 7100 dispatch console can support 1 desktop microphone.

If a desk microphone is connected to a dispatch console while one or two headsets are connected, the desk microphone is only active during a transmit function when the dispatcher presses the transmit button on it. This solution prevents the desk microphone from picking up unwanted background sound when the dispatcher uses a headset to transmit.

Footswitch

Each MCC 7100 IP Dispatch Console can support one footswitch.

The footswitch provides two foot pedals in a rugged, metal housing with a 10 foot cable. One pedal is for the general transmit feature and the other pedal is for the monitor feature.

The footswitch makes it possible for a dispatch operator to operate these features with their feet so their hands are freed for other tasks.

If necessary, the footswitch can be permanently fastened to the floor.

Figure 14: Footswitch

MCC7500_footswitch

Table 14: Footswitch Pinout

This table presents footswitch connector pinout. The pinout is the same as for Voice Processor Module (VPM) footswitch port.

Pin Number	Description (+) and (–) symbols indicate pin polarity
3	PTT In (+)
4	PTT In (–)
5	Monitor In (–)
6	Monitor In (+)

Headset Jacks

The USB Audio Interface Module can support up to two headset jacks. A headset jack allows a dispatch console user to use a headset while operating the dispatch console. The headset jack supports headsets that use either PJ7 (6-wire) or PJ327 (4-wire) long frame connectors. The 6-wire headsets have a PTT button while the 4-wire headsets do not have a PTT button. The headset jacks shipped from the factory are configured for the 6-wire headsets. For the 4-wire operation, you must open the housing and cut a wire inside the headset jack.

Figure 15: Headset Jack

The headset jack has two volume controls:

- For adjusting the level of the received radio audio
- For adjusting the level of the received telephone audio

A small dimple is molded into the headset jack housing near the telephone volume control so that a dispatcher can tell them apart without having to look at them. The headset jack allows the dispatch console users to use headsets, which both decreases the ambient noise in a control room and reduces the effect of any ambient noise on dispatch console transmissions. This solution improves the quality of the audio being transmitted from the control room and allows the dispatch console users to hear received audio more clearly.

When a headset is plugged into a headset jack, the selected receive audio is typically removed from the speaker(s) and routed to the headset earpiece.

Note: A radio resource may be configured so its selected receive audio remains in a speaker even when a headset is in use. If two headsets are connected to a dispatch console, the same audio is heard in the earpieces of both headsets.

If a telephone set connected to a dispatch console telephone/headset port is taken off hook while a headset is connected to a dispatch console, the selected radio audio is removed from the headset earpiece and routed to the appropriate speaker(s). The received telephone audio is routed to the headset earpiece. The headset microphone becomes live and its audio is routed to the external telephone set. In this way, a dispatch console user can talk and listen on the telephone set in a hands-free full-duplex mode.

The headset jack is mounted either underneath a writing surface or on top of a writing surface. The headset jack is designed with a low profile and rounded edges to minimize “knee banging” when mounted underneath a writing surface.

External Paging Encoder Port

The external paging encoder port allows an external tone paging encoder to be used with a dispatch console to provide tone paging services. The dispatch console transmits the paging tones generated by the encoder on the selected conventional radio resource or resources. If a dispatcher wants to send paging tones on an ASTRO® 25 Conventional channel, an external paging encoder is required.

This feature has an RJ45 connector with an analog 600 Ohm audio input to which the paging tones are applied. A paging push-to-talk (PTT) input enables a dry contact closure to be applied that indicates when the dispatch console should transmit the tones on the radio channel or channels.

When the dispatch console sees the paging PTT input go active, it transmits the audio appearing at the audio input on the selected conventional channel(s). If PL Stripping is enabled on a conventional channel, the PL is stripped when the paging tones are transmitted.

No de-emphasis filtering is performed and no talk extend is provided with externally generated tones. Generally, the external paging encoder provides these functions.

Table 15: External Paging Encoder Port Pinout

Pin Number	Description (+) and (–) symbols indicate pin polarity
1	Paging PTT In (–)
2	Paging PTT In (+)
3	Paging Audio In (–)
6	Paging Audio In (+)

Local Logging Recorder Port

The local logging recorder port allows an external logging recorder to be connected to a dispatch console. The port provides an RJ45 connector with a 600 Ohm analog output. The audio that appears on this output is configured and is typically the audio that is transmitted and/or received at that dispatch console.

The configuration of audio presented at this port is tied to the physical dispatch console, so that no matter what user is logged on the dispatch console, the same type of audio is logged. This configuration is done as part of configuring the dispatch console at the Provisioning Manager. The local logging recorder port is configured to log any combination of the following audio sources:

- Audio received from the currently selected radio resources. The level of this audio is not affected by either the individual volume setting of the radio resource or the master volume control on the speaker or headset jack.
- Microphone audio being transmitted to the radio resources currently selected by the operator.
- Microphone audio being transmitted to the radio resources not selected by the operator.

- Any tones generated by the dispatch console that appear in its speakers, for example, trunking tones and emergency tones.
- Tones generated by an external paging encoder.

Long-term, console-specific audio recording is used to record a portion of the inbound and outbound audio present on a specific dispatch console. This recording is usually done by providing a logging port at the dispatch console and wiring that port to a track of an audio recording device. These recordings are typically archived for long-term storage and provide a historical record of the radio communications made at a given dispatch console.

In the local logging recorder port, audio out to logger pins are pins 4 and 5. This pinout is the same as for the Voice Processor Module (VPM) local logging recorder port.

Telephone/Headset Port

The telephone/headset port allows an external telephone set to be connected to the dispatch console. This allows the dispatch operator to use their headset to communicate on both the radio system and the telephone set. The port provides the following inputs and outputs:

- A 600 Ohm analog audio output for the microphone audio from the headset
- A 600 Ohm analog audio input for the audio received from an external telephone
- An input buffer for the Off-Hook signal from the external telephone
- An input buffer for an Auxiliary Jack Sense signal from the external telephone

When a dispatch console senses a dry closure on the Off-Hook input buffer, it removes the selected radio audio from the headset earpiece and routes it into the appropriate speaker(s). Then it routes any audio appearing at the telephone/headset port audio input to the headset earpiece. The dispatch console also routes the headset microphone audio to the telephone/headset port audio output, which allows the dispatch console user to communicate hands-free on the telephone set.

When the dispatch console senses a dry closure on the Auxiliary Jack Sense input buffer, it ignores any closures on the Off-Hook input buffer. This causes the headset to work with the radio system instead of the external telephone system, and allows the dispatch console headset to be used for radio operations when another person is staffing the telephone set.

If the dispatch console user transmits on any radio resources while the Off-Hook signal is active, the headset microphone is rerouted to the radio system for the duration of the transmission. When the transmission ends, the headset microphone is routed back to the telephone/headset port audio output. The headset earpiece audio routing is not changed during the transmission, so the dispatch console user can still hear the audio received on the telephone.

The telephone/headset port allows a dispatcher to use a single headset to communicate on both the radio system and a telephone system, such as a 911 system.

Note: Do not connect the USB Interface Module to the telephone network directly.

The ability to communicate with a 911 system is available even when the USB Audio Interface Module cannot communicate with the MCC 7100 IP Dispatch Console PC.

Table 16: External Phone Interface Connector Pinout

This table presents external phone interface connector pinout. The pinout is the same as for Voice Processor Module (VPM) phone port.

Pin Number	Description (+) and (–) symbols indicate pin polarity
1	Jack Sense In (–)
2	Jack Sense In (+)

Table continued…

Pin Number	Description (+) and (–) symbols indicate pin polarity
3	Audio In from Phone System (–)
4	Audio Out to Phone System (–)
5	Audio Out to Phone System (+)
6	Audio In from Phone System (+)
7	Off Hook In (+)
8	Off Hook In (–)

Local Console Relay Outputs

The Local Console Relay feature uses the existing Aux output ports on the USB Audio Interface Module (USB AIM) to provide relay closures whenever:

- the dispatcher is transmitting audio on a radio resource
- an inbound call is occurring on a selected channel
- there is emergency activity (acknowledged or unacknowledged) on the console
- a pre-designated alarm auxio is activated

The relay closures are used to activate warning lights that serve as an indication that the dispatcher is busy and should not be disturbed. The alarm auxio acts as a notification that a critical situation has arisen that requires attention.

The Elite Admin user interface is used to set Aux/IO that triggers the auxio alarm relay. The **Alarm off** button on the console GUI is used to turn off the auxio alarm relay. The selected receive relay is disabled by default to reduce excess relay chatter during dispatch operations. It can be enabled for a console OP by modifying a local registry key. See the *Enabling the Relays in the Windows Registry on page 99* procedure to enable the relays. There can be multiple public Aux/IOs mapped to a single Alarm Auxio port on the console, the activation of any of these Aux/IO will trigger the alarm.

Table 17: Generic Auxiliary Outputs Pinout

Pin Number	Description (+) and (–) symbols indicate pin polarity
1	Aux Out 1 (–) Op PTT
2	Aux Out 2 (+) Call on Selected channel (if configured)
3	Aux Out 3 (–) Emergency Alarm
4	Aux Out 4 (+) Audible Alarm on Public Aux I/O
5	Aux Out 4 (–) Audible Alarm on Public Aux I/O
6	Aux Out 3 (+) Emergency Alarm
7	Aux Out 2 (–) Call on Selected Channel (if configured)
8	Aux Out 1 (+) Op PTT

Enabling the Relays in the Windows Registry

Procedure:

1 Press the **Windows logo** key + R to access the Run dialog box.

2 Type `regedt32` and click **OK**.

Step result: The **Registry Editor** appears.

3 In the **Registry Editor**, to modify the values, navigate to: `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Motorola\Console\PM\LocalRelayDisable`

4 Change the value in the **Edit String** dialog box and click **OK**.

- Value of 1 (default on install) means the selected receive relay is disabled.
- Value of 0 means all local relays are enabled.

5 Close the **Registry Editor**.

USB Audio Interface Module Specifications

Before you mount and install the USB Audio Interface device (USB AIM), verify that you meet the environmental requirements necessary for the device to operate.

Table 18: USB Audio Interface Module Specifications

USB Audio Interface Module Feature	Specifications
Physical dimensions	Height (excluding the rubber foot): 1.65 inches (42 millimeters)
	Width: 8.39 inches (213 millimeters)
	Depth: 5.23 inches (133 millimeters)
Weight	1.43 lbs (0.65 kg)
AC Operating Voltage for the USB AIM Power Supply	90 VAC - 264 VAC
	Minimum input voltage 90 VAC with 57~63 Hz
	Maximum input voltage 264 VAC with 47~53 Hz
	Typical input voltages are 115 VAC and 230 VAC
DC Operating Voltage for the USB AIM Device	12 VDC (nominal)
Maximum Power Consumption	0.5 A at 12 VDC (6 Watt)
Operating Temperature	5 °C (41 °F) — 40 °C (104 °F)
Storage Temperature	-25 °C (-13 °F) — 70 °C (158 °F)
Relative Humidity Operating	0% — 90% relative humidity at 40 °C non-condensing

USB Audio Interface Module FRU/FRE Information

If you cannot resolve your issues with the USB Audio Interface Module (B1941) by performing basic diagnostics and troubleshooting, you can replace the item.

For the information about the Field Replaceable Units (FRUs) and Field Replaceable Entities (FREs) for the USB AIM, see the following table.

Table 19: USB Audio Interface Module FRU/FRE Information

Part Number	Description
PMPN4052A	USB Audio Interface Module Interchangeable Power Supply without Adaptor (1 piece)
RLN6349A	North American Power Adaptor (1 piece)
RLN6234A	European Power Adaptor (1 piece)
1564027V01	UK Power Adaptor (1 piece)
58012005001	Australia Power Adaptor (1 piece)
RLN6448A	Brazil Power Adaptor (1 piece)
PMHN4249A	Mounting Bracket Kit
30009477001	USB 2.0 Cable for USB Audio Interface Module (1 piece)

USB Audio Interface Module – Bonding and Grounding Requirements

General Bonding and Grounding Requirements

You mount the USB Audio Interface Module device under the writing surface or on the top of the writing surface by using the mounting brackets that are shipped together with the device.

For the information about grounding and bonding equipment in dispatch centers, see the following sections in the *Standards and Guidelines for Communication Sites* manual:

- “Bonding to Equipment and Ancillary Support Apparatus”
- “Grounding (Earthing) for Dispatch Centers and Network Operator Positions and Work Areas”

Grounding Cabling Standards

When you attach the equipment grounding (earthing) conductors to your equipment and the ancillary support apparatus, meet the following bonding standards:

- Each electronic equipment chassis must have a separate and independent equipment grounding conductor.
- Paint, enamel, lacquer, and other electrically non-conductive coatings must be completely removed from threads and bonding surface areas to ensure good electrical continuity (NFPA 70-2005, Article 250.12).

  Note: Using a star washer does not alleviate the requirement to remove non-conductive coatings from attachment surfaces because the star washer does not provide enough contact surface area.

- Connections to steel and galvanized steel pipes, conduit, or other round member items must be made by using a UL 486A listed, bolted clamp with stainless steel securing hardware or other suitable listed means. In high humidity areas, the clamps must be stainless steel or tin-plated UL 486A listed to prevent galvanic corrosion.
- Connections to vibrating or moveable items must be made by using an exothermic weld or a compression-type two-hole lug.
- Connections to structural building steel must be made by using an exothermic weld, listed irreversible high compression-type connection, or listed tin-plated flange-type bonding connector that is equipped with two securing bolts.
- Connections to the raised flooring support system must be made by using a tin-plated listed compression lug, listed pedestal clamp, or exothermic welding. Where practical the lug should be effectively bonded to the upper support plate of the pedestal or to cross connecting stringer.

Equipotential bonding at a network operator position should be integrated into the position equipment to the greatest extent possible. This solution largely reduces the need to place equipment grounding conductors. All telecommunication cable shields, data cable shields, and the equipment or furniture AC equipment ground (ACEG) should be bonded together at the Sub-System Ground Bus Bar (SSGB) position or within the equipment. Outer shields of telecommunication cables serving the network operator position or cluster of positions (to or from a different location) should be bonded directly to the SSGB or by using conductors:

- 16 mm2 csa (#6 AWG) insulated copper conductor for lengths not exceeding 3.9 m (13ft.)
- 6 mm2 csa (#10 AWG) insulated copper conductor for lengths not exceeding 1.8 m (6ft.)

The outer shield ground is provided automatically when the cable connector contains a shield-to-chassis connection.

Installing and Configuring USB Audio Interface Module

The USB Audio Interface Module (USB AIM) is an external device that you connect to the MCC 7100 IP Dispatch Console. Use the following process to cable, ground, and configure the USB Audio Interface Module device.

Prerequisites:

Verify that you have the USB AIM power supply and the USB cable necessary to connect the device to the MCC 7100 IP Dispatch Console PC. The cables necessary to connect peripherals to the USB Audio Interface Module device are provided together with the peripherals.

Verify that you have the brackets necessary to mount the USB AIM device.

Plan out mounting and grounding the USB AIM device. See *USB Audio Interface Module – Bonding and Grounding Requirements on page 101* and*USB Audio Interface Module Specifications on page 100*.

Process:

1 Connect the USB Audio Interface Module.
See *Connecting USB Audio Interface Module on page 102*.
2 Configure the USB Audio Interface Module by using the Peripheral Configuration Tool application.
See *Configuring USB Audio Interface Module on page 103*.

Connecting USB Audio Interface Module

To prepare the USB Audio Interface Module (USB AIM) device for operating in your system, connect it to the MCC 7100 IP Dispatch Console, plug in all the necessary peripherals, and power it on.

Procedure:

1 Connect the USB AIM device to the MCC 7100 IP Dispatch Console PC by using the provided USB cable.
2 Connect the peripherals to the appropriate USB AIM ports.
See *USB Audio Interface Module Connections on page 93*.
3 Connect the USB AIM device to an 12V power socket by using the provided power supply.

Step result: The green and red LEDs on the front of the device are on for a while. Then the red LED goes off and the green LED stays on.

Result: The USB Audio Interface Module is operational but not configured.

Related Links

Installing and Configuring USB Audio Interface Module on page 102
Configuring USB Audio Interface Module on page 103

Configuring USB Audio Interface Module

After you connect the USB Audio Interaface Module to the MCC 7100 IP Dispatch Console, it is operational but not configured. To use the peripherals connected to the USB AIM device, create a configuration in the Peripheral Configuration Tool application installed on the MCC 7100 IP Dispatch Console PC.

Prerequisites:

Verify the state of the LEDs on the front of the device. If only the green LED is on, the device is fully operational and you can continue. If the state of the LEDs is different, solve the issue. See *USB Audio Interface Module Indicators on page 104*

Ensure that the MCC 7100 IP Dispatch Console PC has the Windows 7 Service Pack 1 installed.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

Step result: The application automatically detects the USB AIM device connected to the dispatch console. In the **Summary** pane, the USB AIM device status is `Connected`. A default configuration or a configuration created by a user is displayed. If a default configuration is displayed, the mapped devices are non-Motorola peripherals connected to the dispatch console or Motorola-standard peripherals connected to the USB AIM. If the mapped peripherals are Motorola-standard, the Motorola logo appears for them.

2 Click **Configure AIM**.

Note: The External Phone Interface operates only with the Motorola-standard headset connected to the USB Audio Interface Module. If you use the External Phone Interface, keep the Motorola-standard headset mapped the Peripheral Configuration Tool and connected to the USB AIM device.

Step result: In the **Summary** pane, the appropriate graphical icons are highlighted and the Motorola logo appears for the Motorola-standard peripherals connected to the USB AIM device.

3 If the speakers are not configured, perform the following actions:

a) Go to the **Audio Outputs** tab.

b) Map the MCC 7100 IP Dispatch Console speakers to physical speakers connected to the dispatch console PC by selecting them from the drop-down lists available for each physical speaker.

4 In the **Profile** pane, click **Save As**.

5 In the **Save As** window, enter the name of the new configuration. Click **Save**.

Step result: The application automatically selects the new configuration as the currently used configuration.

Related Links

Installing and Configuring USB Audio Interface Module on page 102

Connecting USB Audio Interface Module on page 102

To prepare the USB Audio Interface Module (USB AIM) device for operating in your system, connect it to the MCC 7100 IP Dispatch Console, plug in all the necessary peripherals, and power it on.

Upgrading the USB Audio Interface Module Software

If you experience problems with the USB Audio Interface Module (USB AIM), it is possible that you use an old software version. Perform the procedure to upgrade the software to the newest version.

Prerequisites: Ensure that you do not have any active calls. During the upgrade of the USB AIM software the audio peripherals connected to the device are not usable. Additionally, the USB AIM device restarts during the upgrade process and all the operations performed by the USB AIM device are terminated.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 From the **File** menu, select **USB AIM Software Upgrade**.

3 In the firmware information window, select **Upgrade**.

4 In the warning window, click **Yes**.

Step result: The upgrade process takes a few minutes. After the upgrade process finishes, the USB AIM device restarts. In the firmware information window, you get a message about a successful software upgrade.

5 Click **OK**.

USB AIM Device Information

If you need details about your USB Audio Interface Module device, you can easily retrieve it by using the **USB AIM Device Information** window in the Peripheral Configuration Tool application.

The window contains the following information:

- Firmware version
- Kit number
- Tanapa number

Accessing the USB AIM Device Information

In the main menu of the Peripheral Configuration Tool application, click **File → USB AIM Device Information**.

Note: If the Peripheral Configuration Tool cannot access the information about the USB Audio Interface Module device, an error appears in the **USB AIM Device Information** window. If you encounter this issue, close the window and unplug the USB cable from the USB AIM device and from the MCC 7100 IP Dispatch Console PC. Wait a while, plug the cable in again and reopen the **USB AIM Device Information** window.

Copying the USB AIM Device Information

In the **USB AIM Device Information** window, click **Copy to clipboard**.

USB Audio Interface Module Troubleshooting

To diagnose problems with the USB Audio Interface Module device, use the LED indicators on the front of the device. They provide helpful information about the possible causes of the problem.

If you cannot diagnose the problem by using the LED indicators, review the troubleshooting scenarios for a procedure that can work for the symptoms you observe.

If you cannot find a scenario for the issue you have or the provided scenario does not work, contact Motorola Solution Support Center (SSC).

USB Audio Interface Module Indicators

USB Audio Interface Module (USB AIM) has one green LED and one red LED on the front panel. Use these LEDs to verify the status of the device and resolve any issues.

When the USB Audio Interface Module (AIM) is fully operational the green LED on the front of the device is on and the red LED is off. It means that device is in the online state. Any other configuration indicates possible issues.

Figure 16: USB Audio Interface Module State Indicators

Table 20: USB Audio Interface Module States

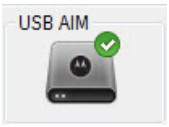
Green LED State	Red LED State	USB AIM Device State	USB AIM Device State Description
On	Off	Online	The USB AIM device is operational. The USB interface is up and working.
Flashing	Off	Link Down	The USB AIM device is operational but the USB interface is not active. External Phone Interface is active. **Possible Issues:** The USB cable is unplugged. The host PC is down. **See:** *Troubleshooting USB Audio Interface Module USB Communication Issues on page 107*
On	Flashing	Impaired	The USB AIM can be operational but requires servicing. The state of the USB interface is unknown. Codecs initialized. **Possible Issues:** An alternate field-programmable gate array (FPGA) image is present but it is corrupt and failed to boot. The EE Non-Volatile Memory (NVM) checksum failure occurred. There is a mismatch between the FPGA version and the NVM version. **See:** *Upgrading the USB Audio Interface Module Software on page 103*
Off	On	Failure	Hardware or firmware failure. **Possible Issues:** The host PC is in the sleeping mode. Power-On Self Test (POST) failed. Codecs failed to initialize. I2C failed. **See:** *Troubleshooting USB Audio Interface Module USB Communication Issues on page 107* *Upgrading the USB Audio Interface Module Software on page 103*

Table continued…

Green LED State	Red LED State	USB AIM Device State	USB AIM Device State Description
On	On	Booting	The device hung in the booting state that takes place just after you power on the device. **Possible Issues:** The USB AIM FPGA did not configure.

USB AIM Status Icon

Go to the **Summary** pane of the Peripheral Configuration Tool and use the USB AIM status icon to verify the state of the device. The icon shows one of the three possible states of the device.

	The USB Audio Interface Module device is connected and fully operational.
	The USB Audio Interface Module device is not connected.
	The USB Audio Interface Module device is connected but not operational. By hovering over the icon, you can learn more details about the problem.

Diagnosing Audio Malfunction in USB Audio Interface Module

If you experience problems with the USB Audio Inteface Module (USB AIM) audio, the possible issues are the problems with the USB connection between the USB AIM device and the dispatch console, problems with the USB AIM device, or problems with the MCC 7100 IP Dispatch Console PC.

Procedure:

1 In the **Control Panel** of the Windows operating system, navigate to the **Sound** window.

2 In the **Recording** tab, for each device on the list, perform the following actions:

a) Right-click the device and select **Properties**.

b) In the **Properties** window, select the **Listen** tab.

c) Ensure that the **Listen to this device** check box is **not** selected.

d) Click **OK**.

3 In the **Sound** window, click **OK** to save changes to all the devices.

4 Disconnect the USB AIM device from the MCC 7100 IP Dispatch Console PC.

5 Ensure that the External Phone Interface (EPI) is connected to the USB AIM device.

6 Restart the USB AIM device by unplugging the power supply, waiting a while, and plugging it in again.

Step result: The USB AIM device goes into the External Phone Interface fallback mode.

7 Verify that the USB AIM audio works in the EPI fallback mode by performing a phone call.

8 Connect the USB device to the MCC 7100 IP Dispatch Console.

9 Perform one of the following actions:

- If the audio in the EPI fallback mode worked properly, verify the USB communication between the USB AIM device and the dispatch console.

See *Troubleshooting USB Audio Interface Module USB Communication Issues on page 107*

- If the audio in the EPI fallback mode did not work properly, try to upgrade the USB AIM software.

  See *Upgrading the USB Audio Interface Module Software on page 103*.

Troubleshooting USB Audio Interface Module USB Communication Issues

If you experience problems with the USB communication between the USB Audio Interface Module (USB AIM) and MCC 7100 IP Dispatch Console the issue can be the connection itself or a problem with the MCC 7100 IP Dispatch Console PC. The symptoms can be the USB AIM device indicating the Link Down or Failure state and the audio malfunction.

Procedure:

Verify the state of the LED indicators on the front of the USB AIM device:

If…	Then…
If the green LED flashes and the red LED is off,	perform the following actions: **1** Verify that the USB cable is properly connected to the USB AIM device and the dispatch console PC. **2** Verify that the dispatch console PC is turned on.
If the green LED is off and the red LED is on,	verify that the dispatch console is not in the sleep mode.

Result: If you solved the problem by using these simple verification actions, the green LED is on and the red LED is off which means that the USB AIM is again online and fully operational. If the USB AIM state did not change, the problem can be the USB AIM device failure.

Post requisites: If you did not manage to solve the issue, try to upgrade the USB AIM software.

Troubleshooting USB Audio Interface Module Upgrade Issues

If you did not manage to upgrade the USB Audio Interface Module (USB AIM), the reason can be, for example, a lost USB connection. If you encountered any upgrade issues, use the following scenario to retry to upgrade the USB AIM software.

Procedure:

1. Unplug the USB cable from the USB AIM device and from the MCC 7100 IP Dispatch Console PC, wait a while, and plug the cable in again.
2. Retry to upgrade the USB AIM software in a typical way.
3. Restart the USB AIM device by unplugging the power supply, waiting a while, and plugging it in again.

   Step result: The green and red LEDs on the front of the device are on for a while. Then the red LED goes off and the green LED stays on.
4. Retry to upgrade the USB AIM software in a typical way.

Troubleshooting Problems with Peripherals

If any of the peripherals that are connected to the USB Audio Interface (USB AIM) do not work properly, verify that they can communicate with the USB AIM device and that there are no connection issues.

Procedure:

1. Ensure that the peripherals are connected to the appropriate ports.

   See *USB Audio Interface Module Connections on page 93*.
2. Verify that the cables and connections for the peripheral devices are in an operating condition and not worn or broken and replace the defective cables.

3 Verify that the peripherals are mapped correctly in the Peripheral Configuration Tool application.
See *Configuring USB Audio Interface Module on page 103*.

Chapter 5

Console Dispatch Status and Peripheral Configuration Tool

This chapter provides descriptions and procedures for using the Console Dispatch Status and Peripheral Configuration Tool.

Note: The Console Dispatch Status application is installed as part of the MCC 7100 IP Dispatch Console and PRX 7000 Console Proxy software installations.

Console Dispatch Status (MCC 7100 IP Dispatch Console)

In an MCC 7100 IP Dispatch Console installation, the Console Dispatch Status application is used to setup and point to proxy server connections for MCC 7100 IP Dispatch Consoles deployed outside the ASTRO RNI. For inside the ASTRO RNI configurations, the Console Dispatch Status is only used for licensing and encryption.

Up to five proxy server connections can be configured in the Console Dispatch Status. Once configured, the Console Dispatch Status application can access any of the proxy server connections to establish a secure link to the ASTRO RNI. Only one proxy server connection can be accessed at any time. Additional proxy server connections that are configured are used as a backup in case the current connection is not available. The Console Dispatch Status application displays the current status of the active proxy connection. The status of inactive proxy server connections is unknown.

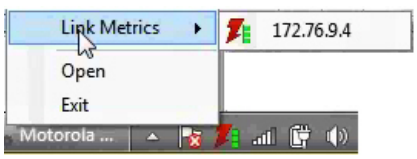
You launch the Console Dispatch Status application from the **Start** menu of the Windows operating system by selecting **All Programs → Motorola → MCC 7100 Dispatch → Console Status**.

The *File* menu is used to Exit the application. Clicking **File → Exit** exits the application. Clicking **X** closes the window and places an icon in the Windows taskbar. The *Help* menu is used to launch the online help or open the **About** window.

Console Dispatch Status Taskbar Icon

The Console Dispatch Status taskbar icon allows the user to monitor the Link Statistics, Open the **Console Dispatch Status** window, or close (Exit) the application. By default, the taskbar icon does not appear in the Windows taskbar until the Console Dispatch Status application is opened and minimized. See *Customizing the Console Dispatch Status Taskbar Icon on page 110* for details.

Figure 17: Console Dispatch Status Taskbar Icon



Customizing the Console Dispatch Status Taskbar Icon

The Console Dispatch Status taskbar icon must be customized before it can appear in the taskbar notification area.

Procedure:

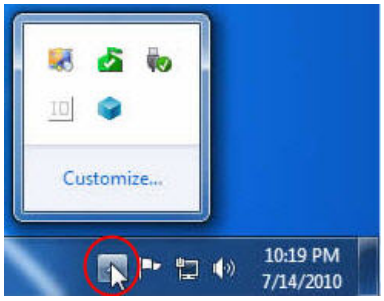
1 Open the Console Dispatch Status application.

2 Click **X** in the upper right hand corner to close the Application.

Step result: This allows the application to appear in the list of icons that can be customized to appear in the taskbar notification area.

3 Click the **Show hidden icons** arrow in the Windows taskbar notification area.

Figure 18: Windows 7 Taskbar Notification Area



4 Select **Customize**.

5 Locate **ConsoleStatusApp** and set the behaviors to **Show icons and notifications**.

6 Click **OK**.

Result:

Note: Selecting **File → Exit** closes the application and removes the icon from the taskbar notification area. Clicking **X** to close the application minimizes the application as an icon in the taskbar notification area.

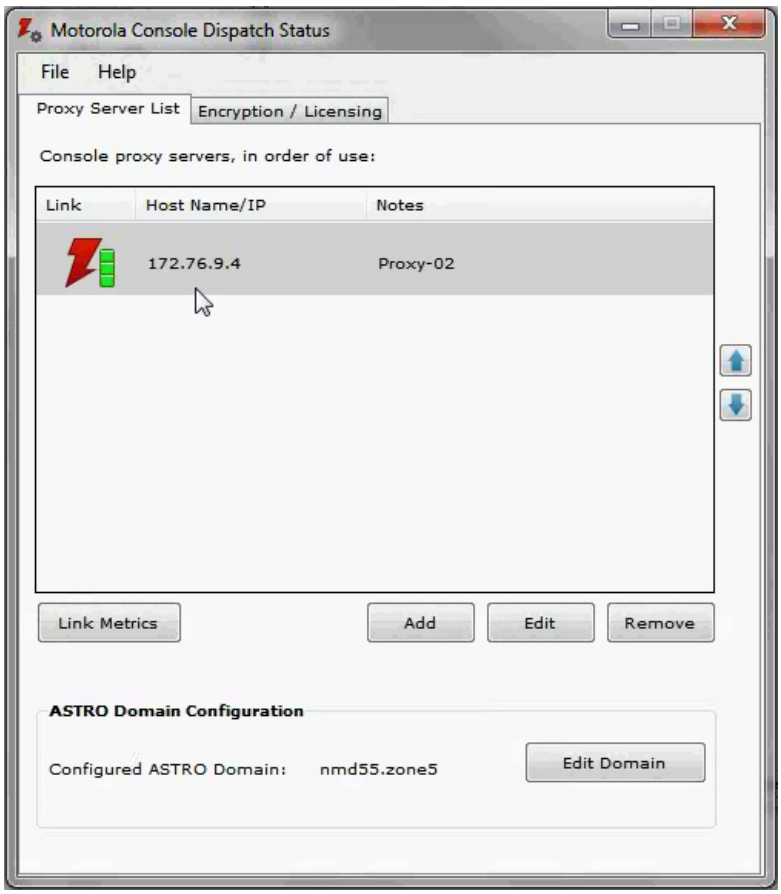
Proxy Server List

Note:

The Proxy Server List tab only appears when the Console Dispatch Status application is launched from the MCC 7100 IP Dispatch Console.

The status of configured proxy server connections are monitored and displayed in the under the Proxy Server List tab. The **Proxy Server List** tab is only visible for MCC 7100 IP Dispatch Consoles deployed outside the ASTRO RNI. For consoles inside the ASTRO RNI, only the **Encryption / Licensing** tab is shown.

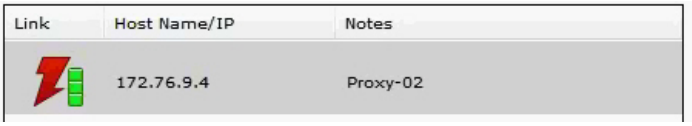
Figure 19: Console Dispatch Status Proxy Server List



Proxy Server List Status Indicator

The current state of the connection is displayed under the Link column. The three bar link indicator moves up and down, indicating the strength of the connection to the proxy server. The status can change from three green bars (excellent) to all grayed out (no connection).

Figure 20: Proxy Server List Status Indicator



Proxy Server List Buttons

The buttons located on the Proxy Server List are used to manage the proxy server connections configured for the MCC 7100 IP Dispatch Console, as follows:

Table 21: Proxy Server List Buttons

Button	Description
Link Metrics	Opens the **Link Statistic** window that is used to diagnostic network issues.

Table continued…

Button	Description
Add	Used to setup and configure proxy server connections.
Edit	Used to modify the currently selected proxy server connection
Remove	Used to remove the currently selected proxy server connection
Up and Down Arrows	Used to change the ordering of the selected proxy server connection

ASTRO Domain Configuration

During installation, the DNS suffix assigned to the domain controller is configured and automatically assigned as the Configured ASTRO Domain. For consoles outside the ASTRO RNI that are on the CEN domain, enter the DNS suffix for the ASTRO domain. The domain can be changed by clicking on Edit Domain. However, any change to the ASTRO Domain Configuration requires a restart of the Elite Dispatch.

Adding a Proxy Server Connection

Proxy server connections are managed by the Console Dispatch Status application by adding proxy server's host name or IP address.

Note: The proxy server connections added to the Console Dispatch Status application can be from any proxy server within the same site or from a different site.

Procedure:

1 From the Windows **Start** menu, select **All Programs** → **Motorola** → **MCC 7100 Dispatch** → **Console Status**.
2 Click **Add** from the *Proxy Server List* tab.
3 Enter a **Host Name** or **IP address** for the proxy connection in the site.

Note: The IP address that is used in the Console Dispatch Status is the IP address mapped in the Control Room Firewall for the PRX 7000 Proxy Server.

4 If necessary, enter a description in the Notes field when only using an IP address for the proxy connection.
5 Click **Save**.

Editing a Proxy Server Connection

Procedure:

1 From the Windows **Start** menu, select **All Programs** → **Motorola** → **MCC 7100 Dispatch** → **Console Status**.
2 Select an existing proxy server connection in the Proxy Server List.
3 Click **Edit**.
4 Modify the **Host Name/IP** or **Notes** fields.
5 Click **Save**.

Removing a Proxy Server Connection

Procedure:

1 From the Windows **Start** menu, select **All Programs** → **Motorola** → **MCC 7100 Dispatch** → **Console Status**.
2 Select an existing proxy server connection in the Proxy Server List.
3 Click **Remove**.

4 Click **Save**.

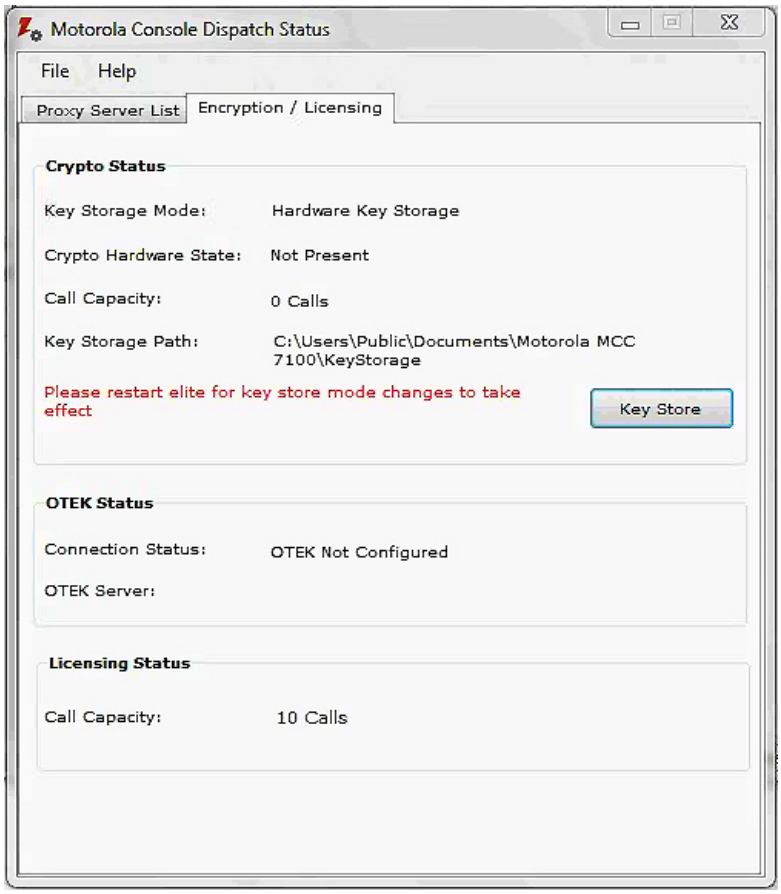
Encryption/Licensing

Note:

The Encryption/Licensing tab only appears when the Console Dispatch Status application is launched from the MCC 7100 IP Dispatch Console.

The Encryption/Licensing tab provides status information regarding the Crypto Status, OTEK Status, and Licensing Status for the MCC 7100 IP Dispatch Console.

Figure 21: Console Dispatch Status Encryption/Licensing



The Crypto Status section displays the method used to store encryption keys. This can be either software key files located on the MCC 7100 IP Dispatch Console or keys loaded onto a CRYPTR micro device. The Key Store button opens an explorer window and displays the directory defined in the Key Storage Path and is used to manage key files stored in the console. The OTEK Status section displays the current status of the OTEK connection and the server. The Licensing Status section displays the current call capacity for the configured license.

Console Dispatch Status (PRX 7000 Console Proxy)

In a PRX 7000 Console Proxy installation, the Console Dispatch Status application displays a list of MCC 7100 IP Dispatch Consoles that are connected to the PRX 7000 Console Proxy, along with the quality of their connection (link

health). In addition, specific MCC 7100 IP Dispatch Consoles deployed outside the ASTRO RNI can be denied access to the console proxy by adding their respective IP addresses to the Remote OP Connection Black List.

You launch the Console Dispatch Status application form the **Start** menu of the Windows operating system by selecting **All Programs → Motorola → PRXY 7000 → Console Status**.

The *File* menu is used to Exit the application. Clicking **File → Exit** exits the application. Clicking **X** closes the window and places an icon in the Windows taskbar. The *Help* menu is used to launch the online help or open the **About** window.

Note: The taskbar icon for the Console Dispatch Status running on a PRX 7000 Console Proxy is similar to the taskbar icon when running on the MCC 7100 IP Dispatch Console. See *Console Dispatch Status Taskbar Icon on page 109* for customization details.

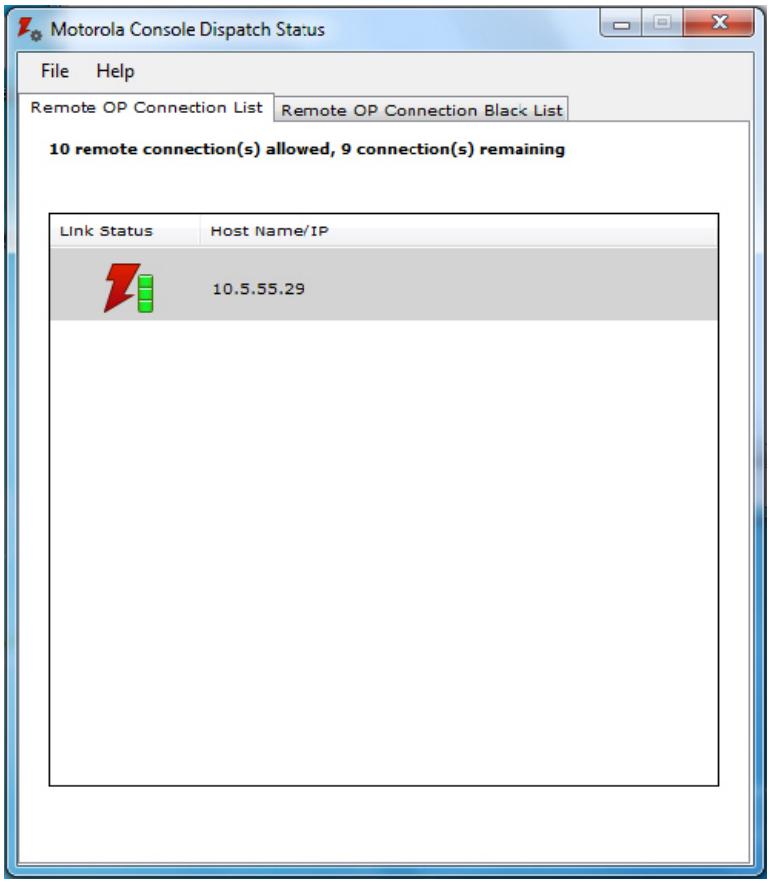
Remote OP Connection List

Note:

The Remote OP Connection List tab only appears when the Console Dispatch Status application is launched from the PRX 7000 Console Proxy.

Once connected, the Remote OP Connection List displays the IP addresses of all connected MCC 7100 IP Dispatch Consoles. In addition, the number of allowed remote connections and remaining connections is displayed in text just below the Remote OP Connection List tab.

Figure 22: Remote OP Connection List



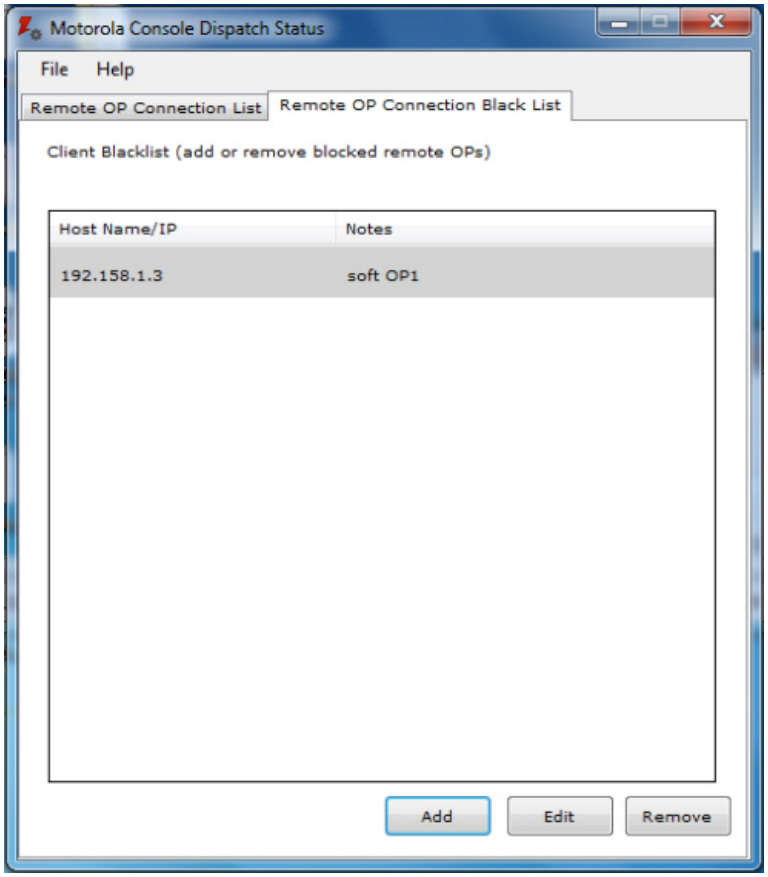
Remote OP Connection Black List

Note:

The Remote OP Connection Black List tab only appears when the Console Dispatch Status application is launched from the PRX 7000 Console Proxy.

Once connected, the Remote OP Connection Black List displays the Host Names and/or IP addresses of all MCC 7100 IP Dispatch Consoles that are not allowed access to the ASTRO RNI. From this tab, the user can Add, Edit, or Remove MCC 7100 IP Dispatch Consoles from the black list.

Figure 23: Remote OP Connection Black List



Adding a Remote MCC 7100 IP Dispatch Console to the Black List

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → PRXY 7000 → Console Status**.

2 Click on the **Remote OP Connection Black List** tab and click **Add**.

3 Enter the **Host Name** or **IP Address** of the remote MCC 7100 IP Dispatch Console to add to the console proxy black list.

Important: This IP address must be the ASTRO RNI IP address for the connecting remote dispatch console and not the CEN IP address.

4 Click **Save**.

5 Restart **Elite Dispatch**.

Editing a Remote MCC 7100 IP Dispatch Console on the Black List

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → PRXY 7000 → Console Status**.
2 Click on the **Remote OP Connection Black List** tab.
3 Select the remote MCC 7100 IP Dispatch Console and click **Edit**.
4 Modify the **Host Name** or **IP Address** of the remote MCC 7100 IP Dispatch Console.

Important: This IP address must be the ASTRO RNI IP address for the connecting remote dispatch console and not the CEN IP address.

5 Click **Save**.

Removing a Remote MCC 7100 IP Dispatch Console from the Black List

Procedure:

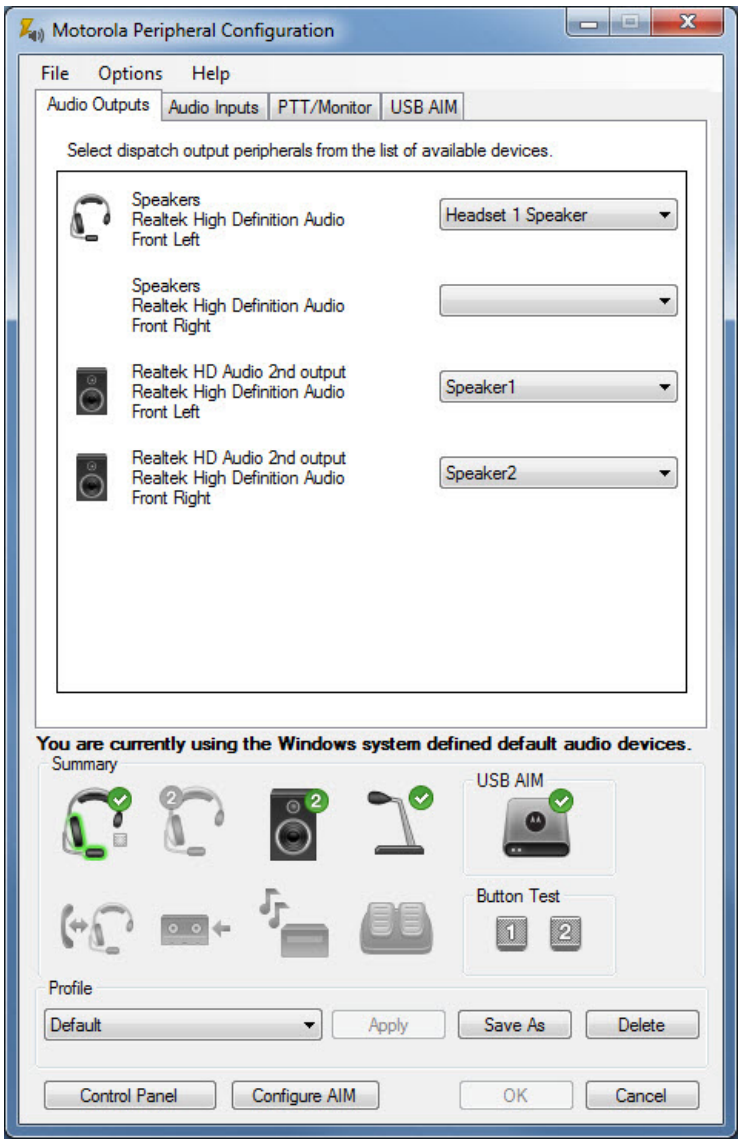
1 From the Windows **Start** menu, select **All Programs → Motorola → PRXY 7000 → Console Status**.
2 Click on the **Remote OP Connection Black List** tab.
3 Select the remote MCC 7100 IP Dispatch Console and click **Remove**.
4 Click **Save**.

MCC 7100 Peripheral Configuration Tool

The Peripheral Configuration Tool is used to configure the audio input and audio output devices used by the MCC 7100 IP Dispatch Console. When launched, the tool reads all audio devices that are currently connected to the dispatch console.

You launch the Peripheral Configuration Tool from the **Start** menu of the Windows operating system by selecting **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

Figure 24: Motorola Peripheral Configuration Tool



Related Links

Peripheral Configuration on page 57

Audio Outputs Tab

The **Audio Outputs** tab displays all the audio speaker devices that are currently configured in the Windows operating system. All the types of audio devices in this tab are speakers. They can be the internal PC speakers, external desktop speakers, or the headset speakers. The Peripheral Configuration Tool separates all available channels of an audio output device. By using the Peripheral Configuration Tool, you can selectively map or unmap the channels to audio speaker devices and, in this way, make the devices available for use by the Elite Dispatch. For PCs containing a special sound card that supports more than 2 speakers, all the speakers are available in the tool, except for any subwoofer output. Up to 8 desktop speakers are supported.

To remove a device from the list of available devices, disable the output device in the **Sound** panel of the Windows operating system. You open the **Sound** panel by clicking the **Control Panel** button in the Peripheral Configuration Tool.

Mapping and Unmapping a Speaker

You map or unmap speaker devices by changing the current settings in the **Audio Outputs** tab of the Peripheral Configuration Tool. The Elite Dispatch can be configured to selectively choose which speakers to enable or disable.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

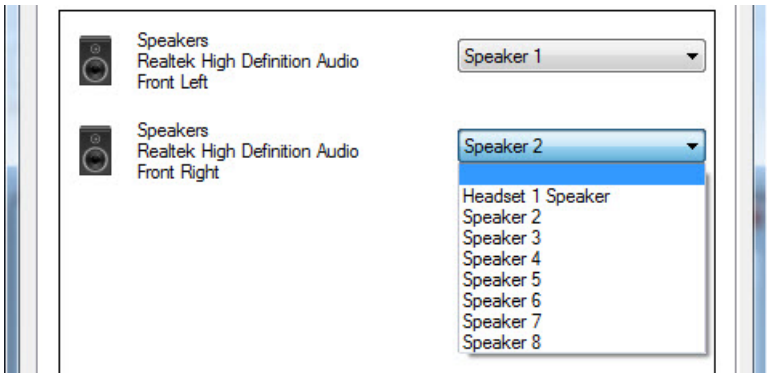
2 Select the **Audio Outputs** tab.

Step result: The list of speaker devices currently configured in the Windows operating system appears.

3 Map or unmap a speaker device by performing one of the following actions:

- To map a speaker device, go to the drop-down list next to the device and select the speaker (channel) that you want to hear on this device.
- To unmap a speaker device, go to the drop-down list next to the device and select the blank selection.

Figure 25: Mapping and Unmapping Speakers



Step result: The number in the speaker icon in the **Summary** section changes to indicate the number of mapped speakers. If you unmap a speaker from the configuration, the number in the speaker icon changes from green to yellow to indicate that all available speakers are not currently configured.

4 Close the Peripheral Configuration Tool by clicking **OK**.

Testing a Speaker

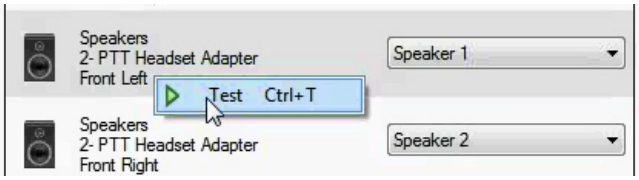
After you configure speaker devices in the Peripheral Configuration Tool, identify each of them by sending an audible tone to them.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 In the **Audio Outputs** tab, right-click the speaker device that you want to test. Click **Test**.

Figure 26: Speaker Test



Step result: An audible tone is sent to the speaker.

3 Close the Peripheral Configuration Tool by clicking **OK**.

Configuring a non-Motorola Headset

To configure a non-Motorola headset, you associate the headset speaker and the headset microphone. If the headset has a PTT button, you also configure the headset PTT. You can configure the non-Motorola headset only as **Headset 1**.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 Select the **Audio Outputs** tab.

3 From the drop-down list next to the device that you want to configure as your headset speaker, select **Headset 1 Speaker**.

Step result: The ear piece speaker on the headset icon in the **Summary** pane is highlighted.

4 Select the **Audio Inputs** tab.

5 From the drop-down list next to the device that you want to configure as your headset microphone, select **Headset 1 Microphone**.

Step result: The microphone on the headset icon in the **Summary** pane is highlighted.

6 If the headset contains a push-to-talk button, select the **PTT/Monitor** tab.

7 From the drop-down list next to the device that you want to configure as your headset PTT, select **Headset 1 PTT**.

8 Save the profile:

- To save the changes to the existing profile, select **Apply**.
- To save the changes as a new profile, select **Save As**.

9 Close the Peripheral Configuration Tool by clicking **OK**.

Audio Inputs Tab

The **Audio Inputs** tab displays all the audio microphone devices currently configured in the Windows operating system.

To remove a device from the list of available devices, disable the input device in the **Sound** panel of the Windows operating system. You open the **Sound** panel by clicking the **Control Panel** button in the Peripheral Configuration Tool.

Mapping and Unmapping a non-Motorola Desktop Microphone

You map or unmap microphone devices by changing the current settings in the **Audio Inputs** tab.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 Select the **Audio Inputs** tab.

3 Map or unmap a microphone device by performing one of the following actions:

- To map a microphone device, go to the drop-down list next to the device and select **Desktop Microphone**.
- To unmap a microphone device, go to the drop-down list next to the device and select the blank selection.

Note:

Only one desktop microphone can be configured for the MCC 7100 IP Dispatch Console.

If you use a non-Motorola desktop microphone and either a non-Motorola headset or the Motorola-standard headset is mapped in the Peripheral Configuration Tool and connected to the dispatch console, you cannot transmit by using the desktop microphone. You must use the headset microphone.

4 Close the Peripheral Configuration Tool by clicking **OK**.

PTT/Monitor Tab

The **PTT/Monitor** tab displays a list of dispatch Push To Talk (PTT) devices that are connected to the PC. USB foot switches, USB headsets with push-to-talk functionality, and joysticks are supported.

Configuring a non-Motorola USB Footswitch

You configure a USB footswitch as a Push To Talk (PTT) in the Peripheral Configuration Tool.

Prerequisites: Connect the USB footswitch to the PC and install all the necessary USB footswitch drivers.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 Select the **PTT/Monitor** tab.

3 From the drop-down list next to the device that you want to use as the PTT device, select **Footswitch**.

Step result: The footswitch icon in the **Summary** pane is highlighted.

4 Optional: Test the PTT device by using the test buttons in the **Button Test** pane.

You can use the test buttons only to test non-Motorola PTT devices. The buttons are not available for the Motorola PTT devices connected to the USB Audio Interface Module.

5 Save the profile:

- To save the changes to the existing profile, select **Apply**.
- To save the changes as a new profile, select **Save As**.

6 Close the Peripheral Configuration Tool by clicking **OK**.

USB AIM Tab

The **USB AIM** tab contains a list of Motorola peripherals that can be connected to the USB Audio Interface Module (USB AIM) device. The list is visible only when the USB AIM device is connected to the MCC 7100 IP Dispatch Console. When the device is connected to the console PC, all the Motorola peripherals are listed, no matter whether they are actually connected to the USB AIM. By using the **USB AIM** tab, you can map or unmap the peripherals.

Mapping and Unmapping Motorola Peripherals

Use the procedure to map or unmap the peripherals that are connected to the USB Audio Interface Module device (USB AIM).

Prerequisites: Connect the USB Audio Interface Module to the MCC 7100 IP Dispatch Console PC.

Procedure:

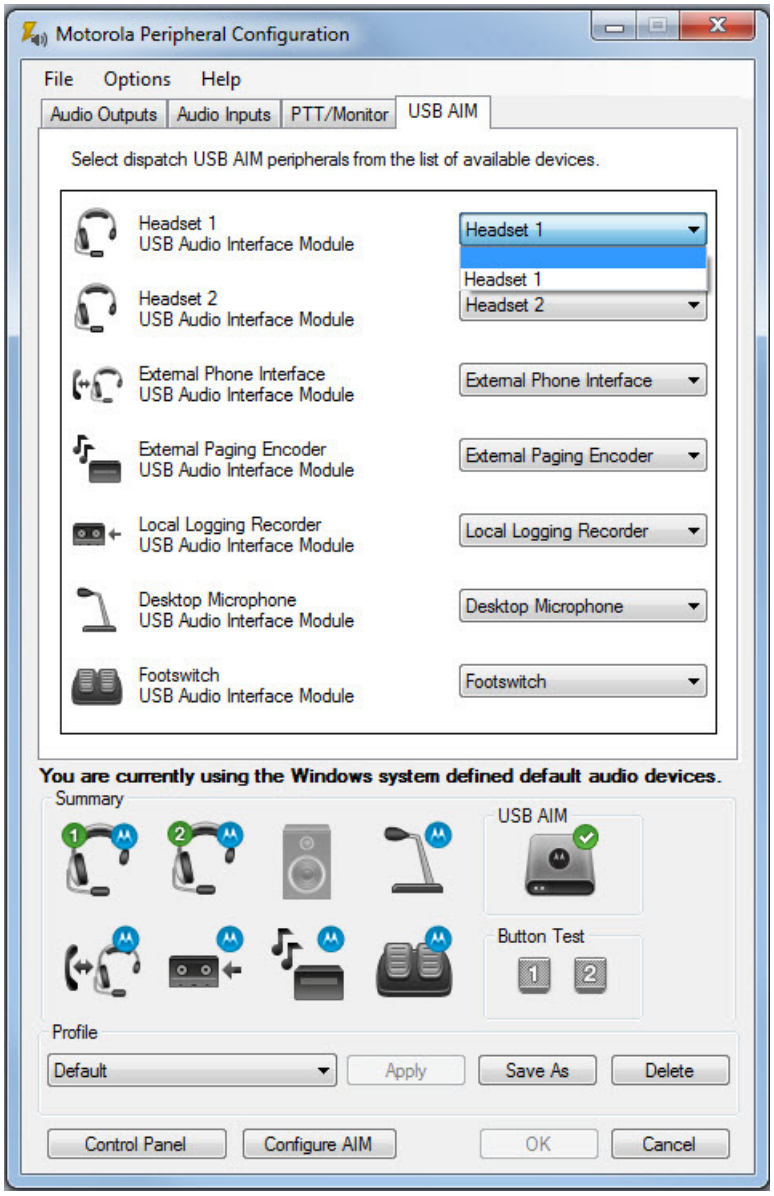
1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 Map the peripherals by performing one of the following actions:

If…	Then…
If you want to map all the Motorola peripheral devices,	click **Configure AIM**.
If you want to map or unmap a single Motorola peripheral device,	perform the following actions: **1** Select the **USB AIM** tab. **2** For the peripheral that you want to map or unmap, perform one of the following actions:

If…	Then…
	• To map a peripheral device, go to the drop-down list next to the device and select it from the list. • To unmap a peripheral device, go to the drop-down list next to the device and select the blank selection.

Figure 27: Mapping and Umapping the Motorola Peripherals



Note:

The External Phone Interface operates only with the Motorola headset connected to the USB Audio Interface Module. Before you use the External Phone Interface, make sure that the Motorola headset is mapped in the Peripheral Configuration Tool and connected to the USB AIM device.

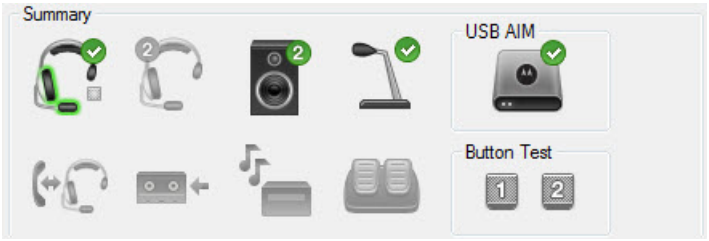
You can use up to two Motorola headsets. If you want to use a Motorola headset together with a non-Motorola headset, map the Motorola headset as **Headset 2**. You can map the non-Motorola headset only as **Headset 1**.

3 Close the Peripheral Configuration Tool by clicking **OK**.

Peripheral Configuration Summary

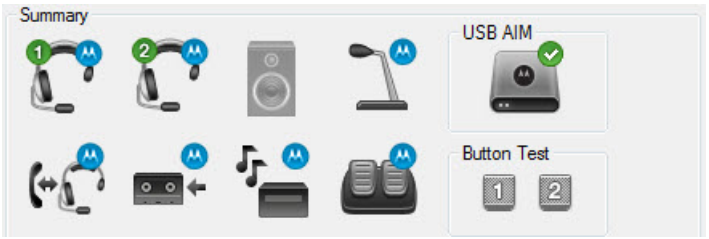
The **Summary** pane consists of icons that represent the peripheral device types that you can map to the MCC 7100 IP Dispatch Console, the USB AIM icon that represents the state of the USB Audio Interface Module, and the **Button Test** pane that contains two buttons to test the PTT function of non-Motorola PTT devices. The peripheral device icons indicate that the devices are mapped but not necessarily connected.

Figure 28: Peripheral Configuration Summary



The peripheral devices that you map to the MCC 7100 IP Dispatch Console can be Motorola and non-Motorola peripherals. To map the Motorola peripherals, you need the USB Audio Interface Module (USB AIM). You connect the peripherals to the USB AIM device. After you connect the USB AIM device to the dispatch console PC and configure it, then all the mapped Motorola peripherals are displayed in the **Summary** pane, no matter whether they are actually connected or not. All the mapped Motorola peripherals are indicated with the Motorola logo.

Figure 29: Peripheral Configuration Summary – Motorola peripherals



The included graphical icons are for two headsets, speakers, a microphone, an external phone interface, a local logging recorder, an external paging encoder, and USB foot pedal switches. The graphical icons are dynamically updated as each audio device is mapped. The graphical icons for headset 2, the external phone interface, local logging recorder, and external paging encoder always represent Motorola devices that can only connect to the USB AIM device. The bookshelf speaker icon indicates the number of non-Motorola speakers currently mapped. The icons for headset 1, desktop microphone, and USB foot pedal switches can represent either Motorola or non-Motorola peripherals depending on what is mapped. Motorola headsets are either mapped or unmapped as single devices. For a non-Motorola headset that can be mapped as headset 1 you can configure the speaker, microphone and PTT switch independently. When only a speaker or microphone is mapped for the non-Motorola headset, a red X appears instead of a green check mark on the headset graphical icon.

Peripheral Configuration Profile

The **Profile** pane is used for managing audio profiles. The user can select from the list of existing profiles, apply changes to existing profiles, create and save a new profile, or delete existing profiles.

Note:

When you try to save a profile in which no device is mapped, an error appears.

When you try to save a profile in which a headset is configured incorrectly, for example, a headset speaker is mapped and no headset microphone is mapped, an error appears.

The default profile uses the current audio output and input devices from the Windows operating system. If no USB audio devices are connected, the internal speakers and microphones are used. If a USB device, such as a headset, is connected, the speaker and microphone of this device are used.

Any changes to the default devices in the Windows operating system cause an immediate change in the Peripheral Configuration Tool and also in the Elite Dispatch, if running. For example, a change to the default microphone will immediately cause the Elite Dispatch to switch to the new default device.

Creating a Profile with non-Motorola Peripherals

Create and use custom profiles to allow users to selectively choose which audio input and output devices to use.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.
2 In the **Audio Outputs**, map the speaker devices.
3 In the **Audio Inputs**, map the microphone devices.
4 In the **PTT/Monitor** tab, map the push-to-talk devices.
5 Save the profile by performing the following actions:
   a) In the **Profile** pane, click **Save As**.
   b) In the **Save As** window, enter the name for the profile. Click **Save**.
6 Close the Peripheral Configuration Tool by clicking **OK**.

Note: If default devices switch in the Windows operating system, no notification is made. Only the configured devices in the custom profile are used. If the devices are disconnected, audio is lost from those devices. Default mode automatically switches to devices configured in the Windows operating system.

Customizing a Profile with Motorola Peripherals

Use this procedure if you want to customize a profile that uses the Motorola peripherals by unmapping the Motorola peripherals or replacing them with non-Motorola peripherals. The Motorola peripherals that you can replace with non-Motorola peripherals are headset 1, desktop microphone, and footswitch.

Prerequisites: Connect and configure the USB Audio Interface Module. See *Configuring USB Audio Interface Module on page 103*.

Procedure:

1 Perform one of the following actions:

If…	Then…
If you want to unmap a Motorola peripheral,	1 Select the **USB AIM** tab. 2 From the drop-down list next to the device that you want unmap, select the blank selection.
If you want to replace the Motorola headset 1 with a non-Motorola peripheral,	1 Select the **Audio Outputs** tab. 2 From the drop-down list next to the device that you want to configure as your headset speaker, select **Headset 1 Speaker**. 3 Select the **Audio Inputs** tab. 4 From the drop-down list next to the device that you want to configure as your headset microphone, select **Headset 1 Microphone**. 5 Select the **PTT/Monitor** tab. 6 From the drop-down list next to the device that you want to configure as your headset PTT, select **Headset 1 PTT**.

If…	Then…
If you want to replace the Motorola desktop microphone with a non-Motorola peripheral,	1 Select the **Audio Inputs** tab. 2 From the drop-down list next to the device that you want map as your desktop microphone, select **Desktop Microphone**.
If you want to replace the Motorola footswitch with a non-Motorola peripheral,	1 Select the **PTT/Monitor** tab. 2 From the drop-down list next to the device that you want map as your footswitch, select **Footswitch**.

2 Save the profile:

- To save the changes to the existing profile, select **Apply**.
- To save the changes as a new profile, select **Save As**.

3 Close the Peripheral Configuration Tool by clicking **OK**.

Deleting a Profile

You can selectively choose which profiles to remove from the tool or delete all profiles except for the currently active profile that does not appear in the list of profiles to delete.

Procedure:

1 From the Windows **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Peripheral Configuration Tool**.

2 In the **Profile** pane, click **Delete**.

3 In the **Select Profile(s) to Delete** window, perform one of the following actions:

- To remove all the profiles except for the currently active profile, select the **Select All** check box.
- To remove a single profile, select the check box next to it.

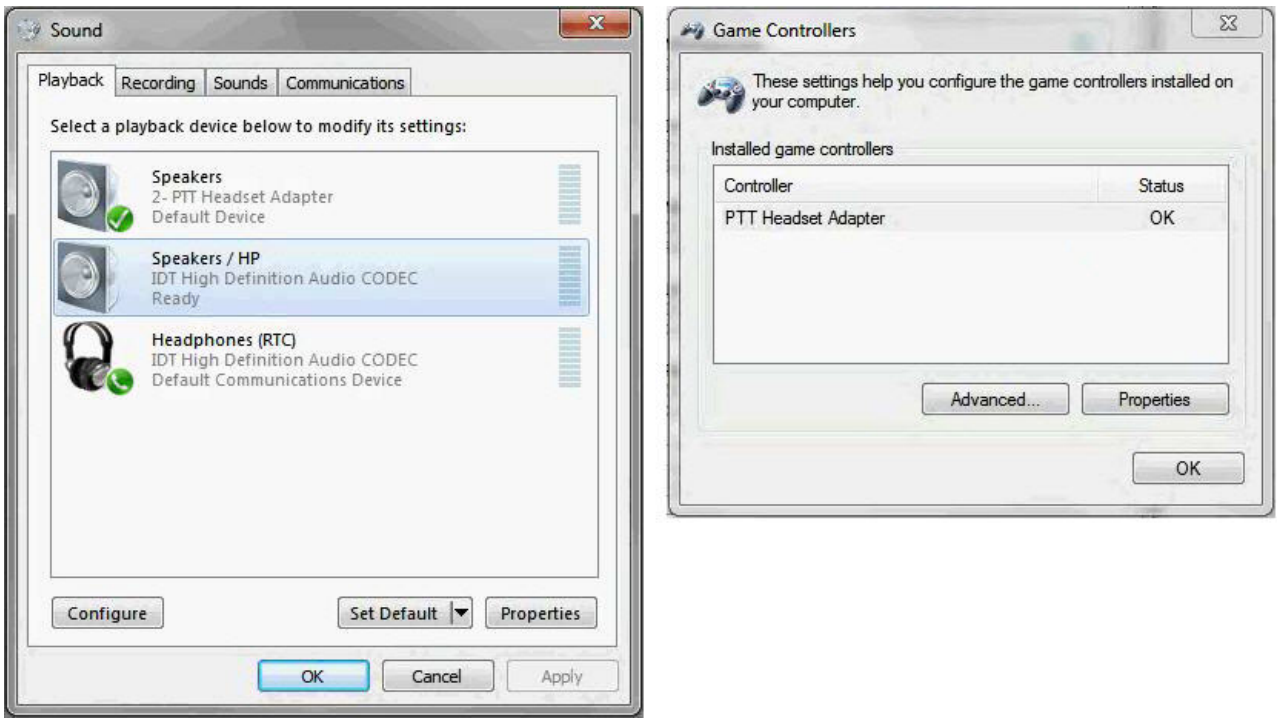
4 Click **Delete**.

5 Confirm the deletion by clicking **OK**.

Control Panel Button

When the **Audio Outputs** tab , the **Audio Inputs** tab, or the **USB AIM** tab is selected, the **Control Panel** button opens the Window **Sound** panel. When the **PTT/Monitor** tab is selected, the **Control Panel** button opens the **Game Controller** window. The default audio devices currently configured in the Windows operating system are shown both in the **Sound** panel and in the Peripheral Configuration Tool.

Figure 30: Sound and Game Controller in the Windows operating system



The **Playback** and **Recording** tabs in the **Sound** panel are similar to the **Audio Outputs** and **Audio Inputs** tabs in the Peripheral Configuration Tool, respectively. The only difference is that only one speaker is shown in the **Sound** panel whereas two speakers are shown and configurable in the Peripheral Configuration Tool. This separation of speakers allows each speaker to be treated as a separate channel for use by the Elite Dispatch.

Note: To prevent speakers or microphones configured in the Windows operating system from appearing in the **Audio Outputs** and **Audio Inputs** tabs of the Peripheral Configuration Tool, disable them from the **Sound** panel.

Motorola Peripherals – Audio Gain

It is important to adjust the audio gain for the peripherals so that the communication can be effective.

You can adjust the audio gain for all the Motorola peripherals:

- External Telephone Interface
- Local Logging Recorder
- External Paging Encoder
- Two pairs of the Motorola headsets
- Motorola desktop microphone

The Motorola peripherals are connected to the USB Audio Interface Module (USB AIM) device.

To change the audio gain for the Motorola peripherals, for each of them, adjust the audio gain parameters in the Provisioning Manager or Configuration Manager application. See the *Provisioning Manager* manual or the *Configuration Manager* manual.

Note: If you change the audio gain for the Motorola peripherals locally in the Windows operating system, the changes are temporary. When you edit the profile in the Peripheral Configuration Tool, restart the Elite application, or disconnect and connect the USB AIM device, the previous settings are restored.

Chapter 6

Instant Recall Recorder

The Instant Recall Recorder (IRR) is a licensed application that is installed as part of the MCC 7100 IP Dispatch Console software. The IRR software makes it possible to record audio traffic on the dispatch console on which it is installed. By using the IRR application the dispatch operator can replay the recorded audio traffic to, for example, verify a specific piece of information.

The Instant Recall Recorder application does not require any additional installation tasks. If you want to make your dispatch operators able to replay the calls that took place on their dispatch consoles, order the number of IRR licenses you need. When you follow the standard procedure for installing the MCC 7100 IP Dispatch Console software, the IRR software is installed automatically. As soon as you place the IRR license files in the right folder on the dispatch console position, the dispatch operator can start using the software.

After you install the MCC 7100 IP Dispatch Console software, you can start the application directly from the Windows operating system or from the Elite Dispatch application

Before you start using the Instant Recall Recorder (IRR), you can use the default settings or perform a short and easy configuration in the application to adjust it your specific needs. For example, you can specify the audio types that you want to record, the time after which the IRR application deletes the stored audio, and the peripheral in which you want to play back the recorded audio. The configuration is the only action that you perform to be able to easily manage and play back the calls recorded on your MCC 7100 IP Dispatch Consoles.

Audio Types Recorded by the Instant Recall Recorder Application

The Instant Recall Recorder (IRR) application is capable of recording four audio types that appear on the dispatch console position on which it is installed. Depending on the configuration, the IRR application records one or more types of audio.

Recorded Audio Types

The IRR application is capable of recording the following audio types:

- Inbound audio from the currently selected channels;
- Outbound audio from the microphone to the selected channels;
- Outbound audio from the microphone to the unselected channels;
- Tones generated by the dispatch console that appear in the speakers of the dispatch console.

The IRR application can record the outbound audio from the dispatch console microphone, the audio that appears on selected resources, and any locally generated tones. Depending on the configuration, the IRR application records only inbound audio on the selected resources or more audio types. To select one of the two available configurations, use the **Configuration** dialog.

Receive Audio
The IRR application records only the inbound audio on the currently selected resources which is the audio that appears in the headset or selected speakers of the dispatch console.

Receive and Transmit Audio
The IRR application can record all the audio types that are within the scope of the IRR functionality.

Note: The types of audio that the IRR application records when you specify receive and transmit audio as the recording source depends on the platform configuration in the Provisioning Manager or Configuration Manager.

Audio Types That Are Not Recorded

The IRR application is capable of recording defined types of audio. The IRR application does not record the following types of audio:

- Inbound audio on the unselected resources which is the audio that appears in the unselected speakers of the dispatch console.
- Outbound audio other than the audio from the dispatch console microphone. For example, it does not record outbound audio the dispatch console retransmits from other consoles or subscriber radios.

The IRR application does not record outbound patch audio.

If the dispatch console is configured in the Provisioning Manager or Configuration Manager to record inbound audio from the currently selected channels, it can record the inbound patch audio that comes from a patch resource that is currently selected.

The IRR application never records audio from patch resources that are not selected. Although entries for these resources can appear in the call list, the IRR application does not record audio for them as it is outbound audio the dispatch console retransmits to other resources in the patch.

The IRR application does not record audio for cross muted and cross busied resources. However, entries for these resources can appear in the call list as they are valid calls in progress.

Audio Only Records

The IRR application is capable of recording private calls between the console position and subscribers or other dispatch consoles.

However, in the case of inbound private calls, the dispatch console opens all audio paths before the dispatch console or the other party key up. As the result, for inbound private call entries, the IRR application cannot display all the details that it normally displays for other calls.

As the result, the IRR application displays the call information in the following way:

- No specific Unit Alias appears. Instead, you see an Audio Only entry.
- No unit ID and Channel Alias appears.
- Start Time, End Time, and Duration data appear as for other calls.

As soon as either private call party keys up, a new entry appears in the call list. The new entry displays all the details in the standard way.

Configuring the Instant Recall Recorder Application

Before you start using the Instant Recall Recorder (IRR), adjust the application to your needs. For example, specify the audio types that you want to record, the retention period, and the peripheral in which you want to play back the recorded audio.

Procedure:

1 Start the IRR application.

See *Starting the Instant Recall Recorder Application on page 129*.

2 From the main menu, select **Settings → Configuration**.

Step result: The **Configuration** dialog appears.

3 In the **Recording Source** section, specify the audio type that you want to record.

Note: Before you decide about the recorded audio type, learn more about the audio types the IRR application records and about the audio types that are *not* within the scope of the IRR functionality. See *Audio Types Recorded by the Instant Recall Recorder Application on page 127*.

- To record the inbound calls on the selected resources only, select **Receive Audio**.
- To record more audio types, select **Receive and Transmit Audio**.

4 In the **Storage Options** section, specify where you want to store the recorded audio:

a) Click **Browse**.

b) In the **Browse For Folder** window, navigate to the folder in which you want to store the audio.

The default location for storing the IRR audio is `C:\Users\<username>\AppData\Roaming\Motorola MCC 7100\IRRSession`.

5 Decide whether you want to make it possible to save calls in a separate `.wav` file:

- If you want the **Save to File** to be active, for the **Save to File Enabled** option, select **Yes**.
- If you want the **Save to File** to be inactive, for the **Save to File Enabled** option, select **No**.

6 Decide whether you want the location in which you store the recorded audio purged each time you exit the IRR application:

- If you want the location purged each time you exit the IRR application, for the **Purge on Exit** option, select **Yes**.
- If you want to keep the IRR audio after you exit the IRR application, for the **Purge on Exit** option, select **No**.

7 Decide about the time after which the IRR application deletes the stored audio by using the **Retention Period** slider.

By moving the thumb of the **Retention Period** slider, you change the values in the **Record Retention** and **Disk Space Used** fields. If it is more convenient, you can use the fields instead of the slider.

8 From the **Output Devices** drop-down list, select the peripheral in which you want to hear the played back IRR audio.

Instant Recall Recorder Basic Operations

Before you start using the Instant Recall Recorder application, learn how to perform basic operations and about the options it offers, especially about the customization options.

Starting the Instant Recall Recorder Application

You can start the Instant Recall Recorder (IRR) application directly from the Windows operating system or from the Elite Dispatch application.

Procedure:

Start the Instant Recall Recorder application by performing one of the following actions:

- If you start the application from the Windows operating system, from the **Start** menu, select **All Programs → Motorola → MCC 7100 Dispatch → Instant Recall Recorder**.
- If you start the application from the Elite Dispatch, in the toolbar, click the **Open IRR** button .

Closing the Instant Recall Recorder Application

If the **Start IRR with Elite** option is enabled in the Elite Dispatch configuration, the Instant Recall Recorder (IRR) closes automatically always when you exit the Elite Dispatch application. If you use a configuration in which this

option is not enabled or want to exit the IRR without closing the Elite Dispatch application, use the following procedure.

Procedure:

From the IRR main menu, select **File → Exit**.

Fixing the Instant Recall Recorder Window on the Top of the Desktop

If you pin the Instant Recall Recorder (IRR) window and then use other applications, the IRR windows does not hide under the windows of these applications but stays on the top of your desktop.

Procedure:

In the IRR title bar, click the **Pin the window** button .

Instead, from the IRR main menu, you can select **View → Stay on Top**.

Step result: The IRR window gets fixed on the desktop an the **Pin the window** button changes into the **Unpin the window** button .

Switching the Instant Recall Recorder Window to the Compact Mode

The compact mode is window view in which only playback buttons, the volume control and optionally, the progress bar are displayed.

Procedure:

1. In the menu bar, click the **Compact Mode** button .

   Instead, from the IRR main menu, you can select **View → Compact Mode**.
2. Optional: Collapse the progress bar section by clicking the **Hide** icon .
3. Deactivate the compact mode by clicking the **Expanded Mode** button .

Expanding and Collapsing Sections in the Instant Recall Recorder Window

You can adjust the appearance of the Instant Recall Recorder (IRR) window to your needs by collapsing the sections that you do not use or use rarely. By default, all the sections in the IRR window are expanded.

Procedure:

Expand or collapse sections in the IRR window by performing one of the following actions:

- To collapse a section, in the upper-right corner of the section, click the **Hide** icon .
- To expand a collapsed section, on the right side of the IRR window, click the appropriate **Expand** icon .

Instead, you can collapse and expand sections by selecting or clearing the section check boxes in the **View** menu.

Managing Detail Columns in the Instant Recall Recorder Call List

The call list section consists of six columns that contain details about the recorded calls, for example, the information about the duration of the calls and the aliases and IDs of the units that took part in the calls. You can adjust the call list to your needs by changing the sequence of the columns and hiding the columns that you do not need.

Procedure:

Adjust the call list to your needs by performing the following actions:

If…	Then…
If you want to change the sequence of the columns in the call list,	click the header of column that you want to move and drug it to a new position.

If…	Then…
If you want to hide a column that you do not use,	perform the following actions: **1** Right-click any column header in the call list. **2** In the sensitive menu, clear the check box next to the name of the column that you want to hide.

Playing Back Calls in the Instant Recall Recorder Application

Use the Instant Recall Recorder (IRR) application to play back the recorded calls. During a single playback session you can play back single calls, multiple calls, or portions of calls.

Procedure:

1 Start the IRR application.

See *Starting the Instant Recall Recorder Application on page 129*.

2 Play back the desired audio portion by performing one of the following actions:

If…	Then…
If you want to play back a single call,	perform the following actions: **1** In the call list, highlight the call that you want to play back. **2** Click **Play**.
If you want to play back multiple calls,	perform the following actions: **1** In the call list, select the check boxes for the calls that you want to play back. **2** Click **Play**.
If you want to play back a call from somewhere in the middle,	perform the following actions: **1** In the call list, highlight the call that you want to play back. **2** In the sound visualization section, double-click the waveform in the place from which you want to start playing back the call. Instead, you can move the thumb in the progress bar. **3** Click **Play**.
If you want to play back a portion of a call,	perform the following actions: **1** In the call list, highlight the call that you want to play back. **2** In the sound visualization section, highlight the audio portion that you want to play back. You cannot highlight an audio portion that is shorter than 50 milliseconds. **3** Click **Play**.

3 If you want the audio portion continuously repeated, click the **Turn Repeat On** button .

4 If you want to play back a previous or the next call from the call list, perform one of the following actions:

- If you want to play back a call that is one position higher than the call or calls that you selected, click the **Rewind** button.
- If you want to play back a call that is one position lower than the call or calls that you selected, click the **Fast Forward** button.

Filtering Calls in the Instant Recall Recorder Application

If you want to reduce the number of calls on the call list, you can filter for specific information.

Procedure:

1 In the call list of the Instant Recall Recorder (IRR), click the **Filter** icon next to the value according to which you want to filter.

Instead, you can access the filters by using the **View** menu.

2 In the filter window, enter the required information.

See *Call Filters in the Instant Recall Recorder Application on page 132*.

3 Activate the filter by clicking the filter magnifier icon.

Step result: A box with the filter details appears above the call list.

4 Deactivate the filter by clicking the exit icon in the box with the filter details.

Call Filters in the Instant Recall Recorder Application

If you want to reduce the number of calls on the call list, you can filter for specific information by using one of the six filters available in the Instant Recall Recorder (IRR) application.

The filters available in the Instant Recall Recorder correspond with the detail columns in the call list.

Unit Alias

Use to limit the number of entries on the call list to calls with a unit that has a specific unit alias. To use this filter, you enter the whole unit alias that you look for, or a string of characters from this unit alias, or a specific character from this unit alias.

Unit ID

Use to limit the number of entries on the call list to calls with a unit that has a specific unit ID or calls with unit IDs that suit the range that you specify. To use this filter, you enter the whole unit ID that you look for or specify the minimum and maximum unit ID in the range.

Channel Alias

Use to limit the number of entries on the call list to calls that took place on a channel with a specific alias. To use this filter, you enter the whole channel alias that you look for, or a string of characters from this unit alias, or a specific character from this unit alias.

Start Time

Use to limit the number of entries on the call list to calls that took place within a specific range of time. To use this filter, you specify the range of time by setting the start time and the end time of the call.

End Time

Use to limit the number of entries on the call list to calls that took place a specific time ago. Specify the time that elapsed from the call or calls that you look for in hours, minutes, or seconds or by using all the values. Yo can also enter the specific time when the call or calls ended.

Duration

Use to limit the number of entries on the call list to calls of a specific duration. To use the filter, specify the minimum and maximum duration of the call or calls that you look for.

Sorting Calls in the Instant Recall Recorder

To sort calls in the call list of the Instant Recall Recorder (IRR) application, you click the header of column according to which you want to sort the calls.

Procedure:

Sort the calls in the call list by performing one of the following actions:

- To sort the calls in the ascending order, click the header of the column according to which you want to sort.
- To sort the calls in the descending order, double-click the header of the column according to which you want to sort.

Rewinding and Fast Forwarding Calls in the Instant Recall Recorder Application

If you play back a call and want to omit a specific portion or hear it once again, use the Instant Recall Recorder fast forwarding and rewinding options.

Procedure:

Rewind or fast forward the played back audio by performing one of the following actions:

- If you want to rewind a played back call, click and hold the **Rewind** button.
- If you want to fast forward a played back call, click and hold the **Fast Forward** button.

Instead of the **Rewind** and **Fast Forward** buttons, you can drag the thumb of the progress bar to the left or to the right.

Changing the Playback Speed in the Instant Recall Recorder Application

If for some reason listening to a call at lower or higher speed can help you retrieve the information you need, adjust the playback speed to your needs.

Procedure:

1 Change the playback speed by performing one of the following actions:

- If you want to decrease the playback speed to 50 percent of the original call speed, under the speed slider, click **1/2**.
- If you want to increase the playback speed to 200 percent of the original call speed, under the speed slider, click **2**.
- If you want to gradually change the playback speed, in the speed slider, click to the left or to the right of the thumb.

2 Set the playback speed to the original call speed, by clicking **1** under the speed slider.

Modifying the Playback Volume and Playback Quality in the Instant Recall Recorder Application

Use the mechanisms available in the Instant Recall Recorder application to adjust the volume and improve the quality of the played back calls. To adjust the volume, you can use a standard volume slider or enable the automatic gain control (AGC). To improve the playback quality, you can use the noise reduction option.

Procedure:

- If you want to change the volume of the played back call, perform one of the following actions:
  - To gradually decrease or increase the volume, in the **Volume** slider, click to the left or to the right of the thumb.
  - To set the volume to a specific volume, click and drag the thumb of the **Volume** slider.
- If you want to mute the call, click the **Mute** icon .
- If you want to level out the volume of a call for which the signal strength changes, set **Automatic Gain Control** to **On**.
- If you have to reduce the irrelevant noise, set **Noise Reduction** to **On**.

Zooming In and Zooming Out Waveform in the Instant Recall Recorder Application

Zoom in on the waveform to see more details for the call that you play back.

When and where to use: By default, the whole call audio is visible in the waveform in the **Sound Visualization** section of the Instant Recall Recorder (IRR). You can zoom in and zoom out on a call when you play it back or just before you start playing it back. In the described scenario, you set the zoom options before you start playing the call.

Procedure:

1 In the call list, highlight the call that you want to play back.

2 In the **Sound Visualization**, set the zoom options by using the **Zoom In** and zoom out icons.

3 Click **Play**.

4 If you want to restore the default waveform view, click the **Zoom Out** icon until it gets inactive.

Saving Calls to a File in the Instant Recall Recorder Application

In the Instant Recall Recorder (IRR) application, you can save a specific call or multiple calls from the call list to a `.wav` file in any localization that you specify.

Prerequisites: Enable the **Save to File** option in your IRR application:

1 From the main menu, select **Settings → Configuration**.
2 In the **Configuration** dialog, for the **Save to File Enabled** option, select **Yes**.

Procedure:

1 Select the calls that you want to save:

If…	Then…
If you want to save a single call,	perform the following actions: **1** In the call list, highlight the call. **2** From the main menu, select **File → Save to File**.
If you want to save multiple calls,	perform the following actions: **1** In the call list, select the check boxes for the calls. **2** From the main menu, select **File → Save to File**.
If you want to save a portion of a call,	perform the following actions: **1** In the call list, highlight the call. **2** In the sound visualization section, highlight the audio portion that you want to save. You cannot highlight an audio portion that is shorter than 50 milliseconds. **3** Right-click the highlighted audio portion. Click **Save Selection to File**.

2 In the **Save As** dialog, navigate to the location in which you want to save the `.wav` file.

3 Specify the name for the `.wav` file.

4 Click **Save**.

Appendix A

MCC 7100 IP Dispatch Console - Additional Procedures and Information

This appendix provides additional helpful procedures and information that are not part of the typical MCC 7100 IP Dispatch Console installation.

Removing All MCC 7100 IP Dispatch Console Applications

Use the following procedure to remove a previous version of the MCC 7100 IP Dispatch Console software. The assumption is that the version that you want to remove is software that was successfully installed and is in an operational state.

When and where to use: By uninstalling the Motorola MCC 7100 Series software, you **only** remove the MCC 7100 application package. Other dependency packages that are both Motorola packages, for example, Motorola Password Vault and Motorola OpenSSL, and non-Motorola packages, for example, 7-zip and DirectX runtimes, are not automatically removed. To remove them from the system, uninstall them manually.

Procedure:

1 Log on to the Windows operating system as an administrator.
2 In the **Control Panel**, navigate to the **Programs and Features** pane.
3 Select **Motorola MCC 7100 Console Operator Position Series**.
4 Click **Uninstall**.

Note: An error message can appear stating:`ERROR 1306: Another app has exclusive access to the file C:\...\Debug.mdb. Please shutdown all other apps and retry.` If the message appears, wait one minute and click **Retry**.

5 Close the **Programs and Features** window.
6 Reboot the PC.

Removing the Elite Admin and Elite Dispatch Applications Only

By default, both Elite Admin and Elite Dispatch applications are installed on the MCC 7100 IP Dispatch Consoles. You can remove the Elite Admin or Dispatch application individually. If you want to re-add the removed components, you must reinstall the application software.

Procedure:

1 Log on to the Windows operating system as an administrator.
2 Select **Start → Control Panel**.
3 In the **Control Panel**, navigate to the **Programs and Features** pane.

4 From the list, select **Motorola MCC 7100 Console Operator Position Series**. Click **Change**.

Step result: The **InstallShield Wizard** window appears.

5 On the welcome page, click **Next**.

6 On the **Program Maintenance** page, select **Modify**. Click **Next**.

7 On the **Custom Setup** page, click the drop-down menu for the feature that you want to remove and select **This Feature will not be available**. Click **Next**.

8 On the **Ready to Modify the Program** page, click install.

9 On the **InstallShield Wizard Completed** page, click **Finish**.

10 When prompted to reboot, click **Yes**.

Configuring a Preconfigured Patch Console (Inside the ASTRO RNI)

An MCC 7100 IP Dispatch Console can be configured as a preconfigured patch console. This configuration allows the console to automatically log on to Windows, start Elite, and activate preconfigured Patch Groups.

Prerequisites: Only applies to an MCC 7100 IP Dispatch Console configured as a preconfigured patch console deployed inside an ASTRO RNI. This process assumes that an ELT file exists for the preconfigured patch console. See the *MCC 7500/7100 Elite Admin User's Guide* for creating Elite configuration files.

When and where to use: A preconfigured patch console must be a member of the preconfigured patch organization unit at the domain controller in order to prevent the security banner from being displayed during login.

Note: If converting a regular dispatch console to a preconfigured patch console, the console must be rejoined to the domain, as follows:

- Add the dispatch console to the domain for the console site. See *Setting Up the Domain for an MCC 7100 IP Dispatch Console Inside the ASTRO RNI on page 60*.
- Rejoin the console to the domain. See the "Joining and Rejoining a Windows-Based Device to an Active Directory Domain Using a Script" section in the *Authentication Services* manual.

Process:

1 Configure automatic Windows login. See *Configuring an Automatic Windows Login on page 136* for details.

2 Add Elite authentication to Windows registry. See *Adding Elite Authentication Username and Password to the Windows Registry on page 138* for details.

3 Create batch file for automatic network authentication. See *Creating Batch File for Automatic Network Authentication on page 138* for details.

4 Reboot the computer.

Note: After a reboot, Windows automatically logs in and starts Elite.

Configuring an Automatic Windows Login

An automatic Windows login is only supported for MCC 7100 IP Dispatch Consoles configured as permanent patch consoles.

Warning: A security risk exists when configuring automatic Windows Login.

Note: A console previously configured for automatic Windows login may no longer login as anticipated once the PC is joined to the domain.

Note: The user may be required to create the registry keys mentioned in this section.

Process:

1 Add Windows domain username and password to Windows registry.
2 Configure the domain controller for the preconfigured patch OP.

Adding Windows Domain Username and Password to Windows Registry

Procedure:

1 In Windows 7, select **Start** and enter `regedt32` in the search field.

Note: When prompt for permission, click **Continue**.

2 In the registry editor, navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\ WindowsNT \CurrentVersion\Winlogon`.
3 Double-click **AutoAdminLogon** value.
4 Enter `1` in the **Edit String** window.
5 Click **OK**.
6 Ensure that the **AutoLogonCount** entry does not exist.

Note: If **AutoLogonCount** exists, delete it from the registry.

7 Double-click the **DefaultUserName** value.

Note: If **DefaultUserName** does not exists a new String Value must be created.

8 Enter a valid Windows Local username for the computer in the Edit String box.
9 Click **OK**.
10 Double-click the **DefaultPassword** value.

Note: If **DefaultPassword** does not exists a new String Value must be created.

11 Enter a valid Windows Domain Password for the Username used in *step 8*.
12 Click **OK**.
13 Double-click the **DefaultDomainName** value.

Note: If **DefaultDomainName** does not exists a new String Value must be created.

14 Enter a valid Windows Domain for the computer In the Edit String dialog box.
15 Click **OK**.
16 Exit the Registry Editor.

Configuring the Domain Controller for the Preconfigured Patch OP

Note: This procedure is not applicable for ASTRO® 25 Conventional IV&D System (K1/K2).

Procedure:

1 Log on to the Zone Level Domain Controller.

Note: When prompt for permission, click **Continue**.

2 Open **Administrative Tools**, and select **Group Policy Management**.
3 Locate the Preconfigured Patch Dispatch Console GPO in the list of Group Policy Objects.
4 Right-click the Preconfigured Patch Dispatch Console GPO and select **Edit**.
5 In the Group Policy Object Editor, select **Polices** from the Computer Configuration section.
6 Select **Administrative Templates** from the Policies section.
7 Select **Classic Administrative Templates (ADM)** from the Administrative Templates section.
8 Double-click the **Custom Settings** folder, and then double-click the **Logon** folder.
9 Double-click the **Specify password for AutoLogon policy** option.
10 Set the policy to **Enabled**, and in the Password field specify the password that the preconfigured patch OP uses to log on to the windows domain, and click **OK**.
11 Close the Group Policy Object Editor.
12 Open **Administrative Tools**, select **Active Directory Users and Computers**.
13 Locate the Preconfigured Patch Dispatch Consoles OU. Make sure that the computer object for the Preconfigured Patch OP is a member of this OU.
14 Log on to the Preconfigured Patch OP.
15 From the Start menu, select **Run** and enter `gpupdate /force`. This forces the Preconfigured Patch OP to download the password that was just specified on the Zone Level Domain Controller.

Adding Elite Authentication Username and Password to the Windows Registry

Procedure:

1 In Windows 7, select **Start** and enter `regedt32` in the search field.

Note: When prompt for permission, click **Continue**.

2 In the registry editor, navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432 Node\Motorola\Console\Elite`.
3 Double-click the **U** value
4 Enter a valid **Username** for the Network Authentication in the *Value Data* field.

Note: This username corresponds to the console user created in Provisioning Manager.

5 Click **OK**.
6 Double-click the **P** value.
7 In the Edit String dialog box, enter the password for the username used in *step 4*.
8 Click **OK**.
9 Close the Registry Editor.

Creating Batch File for Automatic Network Authentication

Procedure:

1 In the Windows operating system, open **Notepad**.
2 Enter the following: `ping 127.0.0.1 -n 6 >NUL`.

Note: This line in the bat file pauses the computer for 5 seconds before continuing. This is required for Elite Dispatch software to properly initialize after Windows has been restarted. The delay required vary based on the configuration of the device depending on what cohab applications are installed (including antivirus software), CPU speed, and hardware configuration. If the Elite software does not initialize with the 5 second delay, it may be necessary to increase the delay time.

To adjust the delay time change the number after the "-n" argument. The delay time is 1 second less that the number after "-n". For example "`ping 127.0.0.1 -n 11 >NUL`" creates a 10 second delay.

3 Press **Enter**.

4 On the second line, enter
`"<Path to Elite.exe>" "<path to ELT file to be used for preconfigured patch>" -authenticate`
Step example:

If the elite.exe is installed in the default location and an ELT file called `preconfiguredpatch.elt` exists, then the line would be as follows (including quotation marks):

```
"C:\Program Files (x86)\Motorola MCC 7100\bin\elite.exe" "C:\Users\Public
\Motorola MCC 7100\config\precofiguredpatch.elt" -authenticate
```

5 Save the file as **PreconfiguredPatch.bat** and save it to the following location:

`C:\Users\<Windows AUTHENTICATION USERNAME>\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup`.

Note: The **AUTHENTICATION USERNAME** should match the one that is used in the Registry for Automatic Login. The exceptions would be if zone suffixes or enumerated instances exist. (EG "C:\Users\motosec.zone1.004") In these cases use the most recent directory that matches your currently logged in Windows User account.

6 Reboot the computer.

Note: After the computer reboots, Windows automatically logs in and starts Elite.

Fault Managment

Fault Management for Devices Inside the ASTRO RNI

Note: When auto-discovering the MCC 7100 IP Dispatch Console from the UEM, make sure to have the console application up and running otherwise auto-discovery will fail and the device will need to be rediscovered.

MCC 7100 IP Dispatch Console Fault Management

The MCC 7100 IP Dispatch Console supports the same fault interface as the MCC 7500 Dispatch Console. The MCC 7100 IP Dispatch Console has the same sysOid as the MCC 7500 Dispatch Consoles. Faults from the MCC 7100 IP Dispatch Console are displayed as "Motorola Dispatch Console – MCC 7500".

PRX 7000 Console Proxy Fault Management

The PRX 7000 Console Proxy is managed as an IP managed device by the UEM. The computer is discovered as a generic node and is supervised using ICMP requests. The UEM manages and reports the network path status from the UEM to console proxy PC.

Control Room Firewall Fault Management

Firewalls in an ASTRO® 25 Core are IP managed devices. The Control Room Firewall will be discovered as a generic node, and will be supervised using Internet Control Message Protocol (ICMP) requests. The UEM will manage and report communication link status for the Control Room Firewall.

See “Discovering Devices” in the *Unified Event Manager* manual.

Fault Management for Devices Outside the ASTRO RNI

The MCC 7100 IP Dispatch Console fault management is not supported outside the ASTRO RNI. Due to the nature of the deployment MCC 7100 IP Dispatch Consoles outside the ASTRO RNI may be active for a brief period of time. The dispatch consoles are not expected to run in a 24 hours a day, 7 days a week environment. MCC 7100 IP Dispatch Consoles outside the RNI are not discovered in UEM.

Embedded Password Management

The MCC 7100 IP Dispatch Console supports password management for embedded passwords. For procedures on using password management, see “Appendix C - Embedded Password Management” in the *Authentication Services* manual.

Note: When changing an embedded password for the MCC 7100 IP Dispatch Console, shutdown the Elite Dispatch application. Restart Elite after the password is changed.

Appendix B

Enhanced Alert Tones

Use the following information to create and configure alert tones that meet the specific requirements of your organization.

Enhanced Alert Tones Overview

The Enhanced Alert Tones feature increases the number of the alert tones that you can use with the dispatch console. It also provides increased flexibility in using the alert tones as it makes it possible to replace the predefined and unconfigurable alert tones provided by Motorola with alert tones that you can customize according to your needs.

Before the introduction of the Enhanced Alert Tones feature, the dispatch console supported three distinct, predefined, and unconfigurable alert tones. They were available based on the console configuration parameters in Provisioning Manager or Configuration Manager application and based on the dispatch console position setup in the Elite Admin application.

The Enhanced Alert Tone feature makes it possible to use up to 15 console alert tones. With the initial installation of the dispatch console software that supports the Enhanced Alert Tone feature, 15 predefined enhanced alert tones are installed in a predetermined location on the console client.

You can override the default enhanced alert tones by creating customized enhanced alert tones with an audio file processing software application. The custom files must meet the required audio file specifications and the file location and naming conventions.

Enhanced Alert Tones – Audio File Specifications

Enhanced Alert Tones feature makes it possible to create custom alert tones on your own. You can create new audio files or customize the predefined alert tones provided by Motorola. However, all the files must meet some requirements.

General Specifications

If an enhanced alert tone file does not meet the required criteria, the dispatcher fails to play the tone and instead an error notification appears in the status line of the Elite application. Your customized enhanced alert tone files must meet the following requirements:

- The file has `.wav` extension;
- The audio is sampled at 8 ksps;
- The audio is mono (single channel);
- The audio samples are 16-bit PCM;
- The audio is longer than 20 milliseconds but shorter than five minutes.

Motorola recommends the `.wav` file has an average level of -28 dBov to achieve the desired system output level of -22 dBm0.

Note:

Motorola recommends the use of commercially available sound editing software to modify or create customized `.wav` files for the enhanced alert tone feature.

If you formatted an enhanced alert tone according to the listed specifications and the dispatch console cannot utilize it, your sound editing software may have saved the alert tone in a non-standard `.wav` format which the dispatch console cannot process. If you encounter this issue, the only solution is to re-record the audio by using an application which saves the `.wav` files in the standard format that can be processed by the dispatch console.

Cohabitation of sound editor software on the MCC 7500 operator position PC is not supported. Use of sound editor software on the MCC 7500 operator position may have unintended effects on the MCC 7500 software.

AMBE+2 Specifications

If you use a digital trunking system that uses the AMBE+2 vocoder, make sure to meet the following requirements:

- The frequencies of the generated tone must be between 120 Hz and 3840 Hz;
- The duration of a continuous tone at one frequency must be greater than or equal to 50 milliseconds;

Any tones outside of those boundaries exhibit severe distortions that can be intolerable for listeners. The decoded frequencies of the generated tones may be outside the tolerance of most analog equipment.

If you use an analog conventional system that uses the G.728 vocoder, there are no restrictions on the content of the `.wav` files.

Enhanced Alert Tones – Audio Files Configuration

Read this topic to learn how to override the predefined enhanced alert tones or remove access to an enhanced alert tone entirely.

Audio File Location

Alert tones are stored in two separate directories. One directory is for the predefined alert tones and the other is for custom alert tones. The predefined alert tones are stored in the following directory:

```
C:\Users\Public\Documents\Motorola MCC 7100\alert tones\default
```

The custom alert tones are stored in the following directory:

```
C:\Users\Public\Documents\Motorola MCC 7100\alert tones\customized
```

The Elite application supports up to 15 alert tones. Custom alert tones override their corresponding predefined alert tones. After the initial installation, the **default** directory contains 15 predefined alert tone `.wav` files and the **customized** directory is empty.

Custom Alert Tones Installation

If you want to override a predefined alert tone with a custom alert tone, you must meet the following requirements:

- The custom audio file meets the required specifications. See *Enhanced Alert Tones – Audio File Specifications on page 141*
- The name of the custom audio file is `AlertTone`***`<number>`***`.wav`

  where ***`<number>`*** is the number of the predefined alert tone that you want to override.
- The custom audio file is in the following directory for the custom alert tones:

  ```
  C:\Users\Public\Documents\Motorola MCC 7100\alert tones\customized
  ```

For example, if you want to override the predefined alert tone 15 with a custom file, save the custom file in the **customized** folder with the name `AlertTone15.wav`. To restore access to the predefined alert tone, remove the custom alert tone file from the **customized** directory. Separate directories for the predefined alert tones and the custom alert tones make it extremely easy to replace and restore the predefined alert tones.

If the corresponding **Alert Tone** button or the **Alert Tone Selector** button is added to the toolbar in the `.elt` configuration file that is used by the Elite Dispatch application, you can send the custom alert tone immediately after you install it. If none of the buttons is configured in the `.elt` file, you must add the button by using the Elite Admin application and restart the Elite Dispatch application. See the *MCC 7500/7100 Elite Admin User Guide* and the *MCC 7500/7100 Elite Dispatch User Guide* manuals.

Permanent Removal of an Alert Tone

The most common way of making specific alert available or unavailable for dispatchers is by modifying the `.elt` configuration files in the Elite Admin application. You make an alert tone available by adding the corresponding **Alert Tone** button or the **Alert Tone Selector** button to the toolbar of the Elite Dispatch application. However, if you want to be sure that a specific dispatch position does not have access to a specific alert tone, you can remove the alert tone from both the **customized** and **default** directories. A good practice is to keep a backup of the removed predefined alert tone files in the event you want to quickly restore them.

To remove the corresponding **Alert Tone** button from the toolbar of the Elite Dispatch application or to remove the corresponding selection from the list of the **Alert Tone Selector** button, you must restart the Elite Dispatch application.

Restoration of a Removed Alert Tone

If you want to restore an alert tone, it means that you removed the alert tone and you want to place it back in the **default** or **customized** directory. The name of the restored default alert tone must be `DefaultAlertTone`***`<number>`***`.wav` and the name of the restored customized alert must be `AlertTone`***`<number>`***`.wav`

where ***`<number>`*** is the number of the alert tone that you want to restore, for example, `DefaultAlertTone15.wav`.

If the corresponding **Alert Tone** button or the **Alert Tone Selector** button is configured in the `.elt` file, the alert tone is available as soon as you load the `.elt` file into the Elite Dispatch application. If the corresponding **Alert Tone** button and the **Alert Tone Selector** button are not added to the toolbar in the `.elt` configuration file, you must add any of the buttons to the toolbar by using the Elite Admin application.

Note: The customized alert tones have always higher priority than the default alert tones. To restore a default alert tone, you place it back in the **default** folder. To use it in the Elite Dispatch application, you must remove the corresponding alert tone from the **customized** folder.

The changes are not always visible in the `.elt` configuration file that is opened in the Elite Dispatch application at the moment of restoration. See the following scenarios for the actions to perform to use the restored alert tones in a configuration loaded at the moment of restoration.

When you restore a customized alert tone, one of the following scenarios takes place:

- The loaded `.elt` file is configured for a specific alert tone, but the alert tone is removed both from the **default** and **customized** folder. You restore the alert tone in the **customized** folder. To see it in the `.elt` configuration loaded in the Elite Dispatch application, reload the `.elt` file.
- The loaded `.elt` file is configured for a specific alert tone which is removed only from the customized folder. You restore the alert tone in the **customized** folder to use it instead of the default alert tone. No reload is necessary for the changes to be visible in the `.elt` configuration loaded in the Elite Dispatch application.
- The loaded `.elt` is not configured for a specific alert tone. You restore the alert tone in the **customized** folder and you want to use it in the loaded `.elt` configuration. After you restore the alert tone, perform appropriate configuration in the Elite Admin application and reload the `.elt` file.

When you restore a default alert tone, one of the following scenarios takes place:

- The loaded `.elt` file is configured for a specific alert tone, but the alert tone is removed both from the **default** and **customized** folder. You restore the alert tone in the **default** folder. To see it in the `.elt` configuration loaded in the Elite Dispatch application, reload the `.elt` file.
- The loaded `.elt` file is configured for a specific alert tone which is removed only from the **default** folder. You restore the default alert tone and want to use it in the loaded `.elt` configuration. After you restore the alert tone, remove the customized alert tone. No reload is necessary for the changes to be visible in the `.elt` configuration loaded in the Elite Dispatch application.
- The loaded `.elt` file is not configured for a specific alert tone. The alert tone is removed both from the **default** and **customized** folder. You restore the default alert and want to use it in the loaded `.elt` configuration. After you restore the default alert tone, perform appropriate configuration in the Elite Admin application and reload the `.elt` file.
- The loaded `.elt` file is not configured for a specific alert tone. It is removed from the **default** but not from the **customized** folder. You restore the default alert and want to use it in the loaded `.elt` configuration. After you restore the default alert tone, remove the customized alert tone, perform appropriate configuration in the Elite Admin application, and reload the `.elt` file.

Provisioning Manager Configuration

Before you launch the console application, you must establish the following parameters in Provisioning Manager.

Tone Pre-time Delay

The Tone Pre-time Delay parameter is particular to conventional channels. It defines the amount of time the console waits to send an alert tone to a voice channel after it indicates the call request to the system for the first time. This pre-time gives the transmitting station and the receiving radios time to detect that a transmission begins on the selected voice channel. It prevents any front-end truncation of the audio that can occur on conventional channels.

For example, if the MDC signaling Pre-time Delay parameter of a channel is configured to truncate alert tones, the Tone Pre-time Delay must be equal to, or greater than the MDC signaling Pre-time Delay. The default value is 0 with the range between 0 to 3,300 milliseconds, in increments of 100.

Alert Tone Talk Extend Time

The Alert Tone Talk Extend Time (sec) makes it possible to set the amount of time all the resources remain keyed after the alert tone is generated which allows the dispatcher to transmit a voice message on the selected channels. By setting the Alert Tone Talk Extend Time parameter, you determine the amount of time the console keeps the voice channel or talkgroup keyed before it automatically dekeys. During this time, the dispatcher can press the transmit button on the console and begin speaking without having to re-initiate the transmission. The Alert Tone Talk Extend Time keeps the resources keyed for the dispatcher after they send the alert tones out. The default time is 1.2 seconds, the range is 0-7.

For more information about setting the parameters, see the *Provisioning Manager* manual.

Elite Admin Configuration

After you create the audio files and save them in the appropriate folder on the console dispatch client, you must make them available for dispatchers by using the Elite Admin application.

When you launched the Elite Admin application, the alert tones are mapped to the application in the following way:

- If the are no custom files, only the available Motorola alert tones are mapped.
- If for any of the Motorola alert tones there is a counterpart in the folder with custom alert tones, the custom alert tone is mapped instead of the Motorola alert tone.

As the result, the number of alert tones that can be available for dispatchers is 15 or less. The available alert tones can be either Motorola alert tones or custom alert tones, or both types. In the Elite Admin application, you make them available for dispatchers by adding them to one of the toolbars in the `.elt` configurations.

Another configuration that you perform by using the Elite Admin application is setting the transmission methods for the available alert tones. You perform it by assigning the available alert tones to one of the following categories:

Momentary

Alert tones that are sent only while the dispatcher presses the **Alert Tone** button on the toolbar in the Elite Dispatch application.

Latched

Alert tones that are sent for a predefined time after the dispatcher presses the **Alert Tone** button on the toolbar in the Elite Dispatch application. They can stop sending the latched alert tone before the predefined time ends by pressing the **Alert Tone** button again.

See the *MCC 7500/7100 Elite Admin User Guide* manual.

Elite Dispatch Configuration and Operation

After you launch the Elite Dispatch application, the software automatically takes the following actions:

- Obtains the Tone Pre-time Delay and the Alert Tone Talk Extend timers that you set up for the system;
- Uses the `.elt` file that you established in the Elite Admin application to determine which audio files must be available for transmission;
- Checks whether the available audio files conform to the format and specifications;
- Enables properly configured audio files for use in the application.

The Elite Dispatch software also compares the number of audio files available in the defined location on the console client to the number of alert tones defined in the `.elt` configuration. If any of the audio files that are specified in the `.elt` configuration are not present in the defined localization, the corresponding **Alert Tone** button is not available to the dispatcher.

To transmit an alert tone, the dispatcher clicks the **Alert Tone Selector** button or the corresponding **Alert Tone** button in the Elite Dispatch application. The **Alert Tone** buttons are numbered accordingly. If you configured the micro help text for the **Alert Tone** buttons, additional information about the alert tone appears when you hover over the button.

For information about using alert tones in the Elite Dispatch application, see the *MCC 7500/7100 Elite Dispatch User Guide* manual.

Appendix C

MCC 7100 IP Dispatch Console – System Release Compatibility

The backward compatibility feature makes it possible to use an MCC 7100 IP Dispatch Console together with the features available on this console in releases previous to the release in which the console was introduced. The ASTRO 7.14 MCC 7100 IP Dispatch Consoles are backward compatible with the ASTRO 7.11 and ASTRO 7.13 systems.

Before you decide between installing and not installing a newer dispatch console in a previous system, see the *Dispatch Console Compatibility Guide* manual. The manual contains details about the features available for dispatch consoles used in system releases previous to the release in which the consoles were introduced.

If you want to use a new dispatch console in a system release previous to the release in which the console was introduced, ensure to obtain and configure all the required components.

Before you install any application or operating system software, audit each dispatch console to determine which version of the system release is currently installed.

ASTRO 7.14 MCC 7100 IP Dispatch Console System Components in an ASTRO 7.11 System

Table 22: ASTRO 7.14 MCC 7100 IP Dispatch Console System Components in an ASTRO 7.11 System

System Components	ASTRO 7.11 Requirements
System Architectures	The System Architectures that support MCC 7100 IP Dispatch Consoles are K, L1/L2, M1/M2 and M3 cores.
Client Operating System	You must install the MCC 7100 IP Dispatch Console software on a client running the Windows 7 Professional operating system.
MCC 7100 IP Dispatch Console Cohabitation	You must install the MCC 7100 IP Dispatch Console on a standalone client. No cohabitation is supported with the MCC 7100 IP Dispatch Console in an ASTRO 7.11 system.
PRX 7000 Console Proxy Cohabitation	You can install the PRX 7000 Console Proxy on a standalone client dedicated to this software application or cohabited with an ASTRO 7.14 MCC 7500 Dispatch Console.
Installation Media	To install the MCC 7100 IP Dispatch Console in the ASTRO 7.11 system, you use the ASTRO 7.14 installation media.
Firewall	You must update the ASTRO 7.11 ZCP firewall configuration.
Console Site LAN Switch	You must update the ASTRO 7.11 console site LAN switch configuration.
Console Site Router	You must update the ASTRO 7.11 console site router configuration.

Setting Up the ASTRO 7.14 MCC 7100 IP Dispatch Console in an ASTRO 7.11 System

Prepare your ASTRO 7.11 system for installing the ASTRO 7.14 MCC 7100 IP Dispatch Consoles and using the features that are available for this consoles.

Prerequisites: Before you install any application or operating system software, audit each dispatch console to determine which version of the system release is currently installed.

Process:

1 Obtain updated configuration files for all the following devices:

- Console site LAN switch. See the *System LAN Switch* manual.
- Site routers. See the *System Gateways – GGM 8000* manual or the *System Routers – S6000/S2500* manual.
- Zone Core Protection (ZCP) firewall. See the *Firewall* manual.
- Control room firewall if equipped. See the *Firewall* manual.

2 Update the group policies objects (GPO) on the domain controller(s) for the MCC 7100 IP Dispatch Consoles. See the *Authentication Services* manual.

3 Set up the MCC 7100 IP Dispatch Console in Provisioning Manager to ensure the console authentication with the Lightweight Directory Access Protocol (LDAP) database.

4 Install the PRX 7000 Console Proxy. See *Setting Up the PRX 7000 Console Proxy on page 81*.

In an ASTRO 7.11 system, you can install the PRX 7000 Console Proxy on a dedicated standalone client running Windows 7 or cohabited with one the following applications:

- ASTRO 7.14 MCC 7500 Dispatch Console
- ASTRO 7.13 or ASTRO 7.14 Console Alias Manager (CAM) client

Note: When you install the ASTRO 7.14 PRX 7000 Console Proxy on an ASTRO 7.11 system, it must use the ASTRO 7.11 version of the windows supplemental configuration (secure) kit. The ASTRO 7.14 application installed on an ASTRO 7.11 system can utilize the ASTRO 7.11 version of the antivirus software.

5 Install the MCC 7100 IP Dispatch Console (and Anti-Virus Software). See *Setting Up the MCC 7100 IP Dispatch Console on page 40*.

6 Update the customer enterprise network (CEN) to support the MCC 7100 IP Dispatch Consoles outside the ASTRO Radio Network Infrastructure (RNI).

Note: The VPN network in the CEN must be configured to allow the MCC 7100 IP Dispatch Console deployed outside the ASTRO RNI to access the VPN.

7 Transfer security keys to the MCC 7100 IP Dispatch Console. See *Load Secure Keys and Algorithms on page 49*.

8 Set up the MCC 7100 IP Dispatch Console peripherals:

- If you use the Motorola peripherals, see *USB Audio Interface Module on page 93* and *MCC 7100 Peripheral Configuration Tool on page 116*.
- If you use non-Motorola peripherals only, see *MCC 7100 Peripheral Configuration Tool on page 116*.

9 Optional: Setup other MCC 7100 IP Dispatch Console-related components:

- If you use the Instant Recall Recorder software, see *Instant Recall Recorder on page 127*.
- If you use the Console Alias Manager client, see *Configuring Console Alias Manager for MCC 7100 Software in an ASTRO 7.11 System on page 150*.

ASTRO 7.14 MCC 7100 IP Dispatch Console System Components in an ASTRO 7.13 System

Table 23: ASTRO 7.14 MCC 7100 IP Dispatch Console System Components in an ASTRO 7.13 System

System Components	ASTRO 7.13 Requirements
System Architectures	The System Architectures that support MCC 7100 IP Dispatch Consoles are K, L1/L2, M1/M2 and M3 cores.
Client Operating System	You must install the MCC 7100 IP Dispatch Console software on a client running the Windows 7 Professional operating system.
MCC 7100 IP Dispatch Console Cohabitation	You can install the MCC 7100 IP Dispatch Console on a standalone client. It can also operate in parallel win an MCC 7500 Dispatch Console.
PRX 7000 Console Proxy Cohabitation	You can install the PRX 7000 Console Proxy on a standalone client dedicated to this software application or cohabited with an ASTRO 7.14 MCC 7500 Dispatch Console.
Installation Media	To install the MCC 7100 IP Dispatch Console in the ASTRO 7.13 system, you use the ASTRO 7.14 installation media.
Firewall	You must update the ASTRO 7.13 ZCP firewall configuration.
Console Site LAN Switch	You must update the ASTRO 7.13 console site LAN switch configuration.
Console Site Router	You must update the ASTRO 7.13 console site router configuration.

Setting Up the ASTRO 7.14 MCC 7100 IP Dispatch Console in an ASTRO 7.13 System

Prepare your ASTRO 7.13 system for installing the ASTRO 7.14 MCC 7100 IP Dispatch Consoles and using the features that are available for this consoles.

Prerequisites: Before you install any application or operating system software, audit each dispatch console to determine which version of the system release is currently installed.

Procedure:

1 Obtain updated configuration files for all the following devices:

- Console site LAN switch. See the *System LAN Switch* manual.
- Site routers. See the *System Gateways – GGM 8000* manual or the *System Routers – S6000/S2500* manual.
- Zone Core Protection (ZCP) firewall. See the *Firewall* manual.
- Control room firewall if equipped. See the *Firewall* manual.

2 Update the group policies objects (GPO) on the domain controller(s) for the MCC 7100 IP Dispatch Consoles. See the *Authentication Services* manual.

3 Set up the MCC 7100 IP Dispatch Console in Provisioning Manager to ensure the console authentication with the Lightweight Directory Access Protocol (LDAP) database.

4 Install the PRX 7000 Console Proxy. See *Setting Up the PRX 7000 Console Proxy on page 81*.

In an ASTRO 7.13 system, you can install the PRX 7000 Console Proxy on a dedicated standalone client running Windows 7 or cohabited with one of the following applications:

- ASTRO 7.14 MCC 7500 Dispatch Console
- ASTRO 7.13 or ASTRO 7.14 Console Alias Manager (CAM) client

Note: When you install the ASTRO 7.14 PRX 7000 Console Proxy on an ASTRO 7.13 system, it must use the ASTRO 7.13 version of the windows supplemental configuration (secure) kit. The ASTRO 7.14 application installed on an ASTRO 7.13 system can utilize the ASTRO 7.13 version of the antivirus software.

5 Install the MCC 7100 IP Dispatch Console (and Anti-Virus Software). See *Setting Up the MCC 7100 IP Dispatch Console on page 40*.

6 Update the customer enterprise network (CEN) to support the MCC 7100 IP Dispatch Consoles outside the ASTRO Radio Network Infrastructure (RNI).

Note: The VPN network in the CEN must be configured to allow the MCC 7100 IP Dispatch Console deployed outside the ASTRO RNI to access the VPN.

7 Transfer security keys to the MCC 7100 IP Dispatch Console. See *Load Secure Keys and Algorithms on page 49*.

8 Set up the MCC 7100 IP Dispatch Console peripherals:

- If you use the Motorola peripherals, see *USB Audio Interface Module on page 93* and *MCC 7100 Peripheral Configuration Tool on page 116*.
- If you use non-Motorola peripherals only, see *MCC 7100 Peripheral Configuration Tool on page 116*.

9 Optional: Setup other MCC 7100 IP Dispatch Console-related components:

- If you use the Instant Recall Recorder software, see *Instant Recall Recorder on page 127*.
- If you use the Console Alias Manager client, see *Configuring Console Alias Manager for MCC 7100 Software in an ASTRO 7.11 System on page 150*.

Configuring Console Alias Manager for MCC 7100 Software in an ASTRO 7.11 System

If you want to use the Console Alias Manager (CAM) in an ASTRO 7.11 system, configure the Fully Qualified Domain Name (FQDN) for the Console Alias Manager (CAM) server, (e.g., camserver01.nmd55.zone5).

Procedure:

1 Create a text file and name it `AliasServerConfig.txt`.

2 Save the `AliasServerConfig.txt` file to `C:\Program Files (x86)\Motorola MCC 7100\bin\`.

3 Place the FQDN for the CAM server in the `AliasServerConfig.txt` file.

4 Shutdown and restart the Elite Dispatch application.

Post requisites:

Note: Delete the `AliasServerConfig.txt` file when you upgrade the ASTRO 7.11 system, or if you use aliases from the UCS. Otherwise, the console continues to use the `AliasServerConfig.txt` file for CAM configurations.

MCC 7100 IP Dispatch Console – Other System Updates and Considerations

When you install the MCC 7100 IP Dispatch Console in a release previous to the ASTRO 7.14 system release, review the relevant features for any updates and considerations related to the backward compatibility feature.

Audio Logging

See the ASTRO 7.14 *MCC 7500 Dispatch Console with Voice Processor Module* manual for details.

Bandwidth Management

See the ASTRO 7.14 *Bandwidth Management* manual for details.

Centralized Event Logging

See the ASTRO 7.14 *Centralized Event Logging* manual for details.

KVL 4000

See the ASTRO 7.14 *KVL 4000 ASTRO 25 User Guide* manual for details.

MCC 7500 Elite Software

The MCC 7100 IP Dispatch Console is supported by the MCC 7100 Elite Admin and Elite Dispatch software. See the following manuals for details:

- ASTRO 7.14 MCC 7500/7100 Elite Admin User's Guide
- ASTRO 7.14 MCC 7500/7100 Elite Dispatch User's Guide

User Configuration Manager and Provisioning Manager

For ASTRO 7.11 system release, see the ASTRO 7.11 *User Configuration Manager* manual.

For ASTRO 7.13 system release, see the ASTRO 7.13 *Provisioning Manager* manual.